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THE COAL AND IRON RECORD.

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THE ENGINEERING AND MINING JOURNAL

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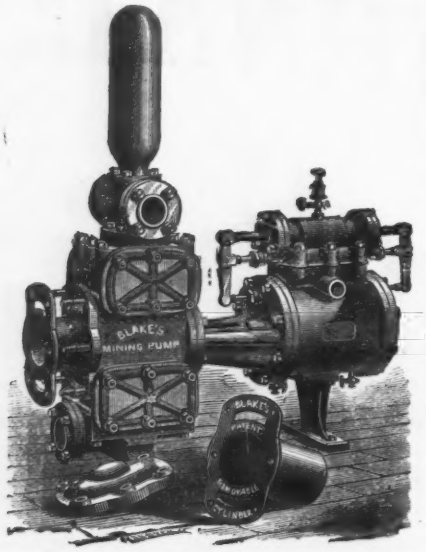

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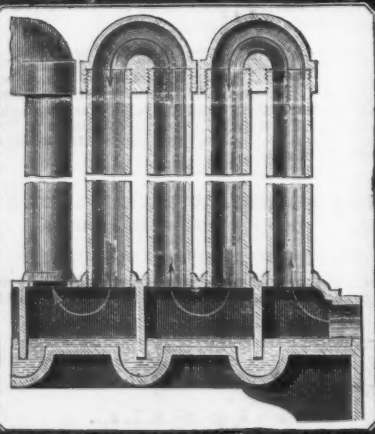

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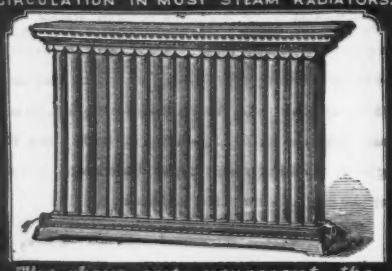

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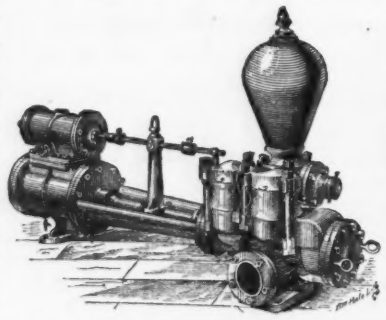

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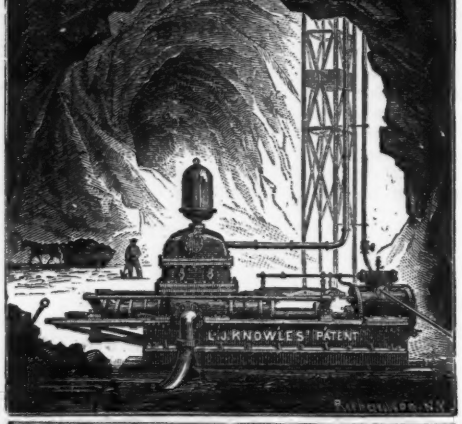

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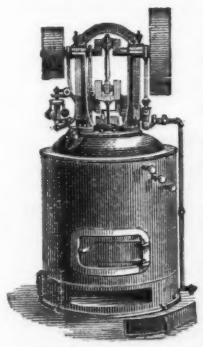

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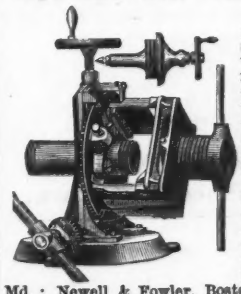

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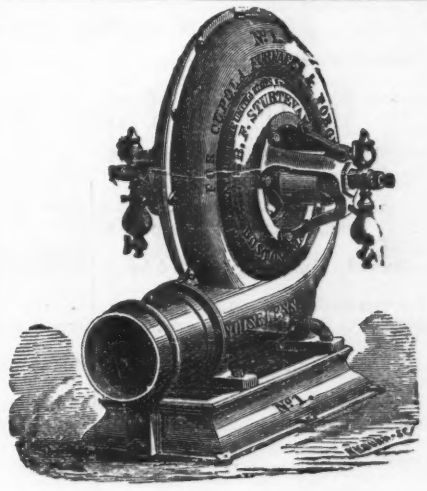

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Extract from report of Committee of Civ. Engs. appointed by Franklin Inst. to examine H. & B.'s new Transit [Dec. 1871]: "It exhibits several novelties of construction which, in the opinion of the committee, render it superior to those now in use, and in its opinion the deviations which they have made from the common styles of Transit are decided improvements."

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THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E.
ROSSITER W. RAYMOND, Ph. D. } Editors.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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The Meeting of the Institute of Mining Engineers.

OF the three meetings of the Institute each year, two are held in mining or metallurgical districts, and the third, or Winter session, is held in one of the large cities. This is a very satisfactory arrangement and has thus far resulted in well-attended meetings in every instance. The Autumn meeting this year has been appointed for the 26th of October, at Cleveland, Ohio, (see announcement in the Official Bulletin of the Institute,) and promises to be a very successful one in the advantages the locality offers in its coal and iron mines, iron and steel works, and other objects of interest. We trust there will be a large attendance and that the members who are unable to be there will show their interest in the Institute by contributing papers which will further the good cause it represents.

There is every prospect of a large and pleasant meeting, and none who can possibly go should fail to do so.

Carbonic Acid Gas for Extinguishing Mine Fires.

THE several portable fire extinguishers which are now in such common use, and which have done such admirable service, are founded on the use of carbonic acid gas as the extinguisher, and have fully demonstrated its practical value. We, some time ago, called attention to the advantages that would result from the use of this same agent in extinguishing fires on shipboard, and in the firey mines of the anthracite region. The portable extinguishers have done good service in several of our coal mines, but the chief difficulty in using them in a confined space is, that they quickly make the air irrespirable, and may cause suffocation of the operator, even before the gas has filled the whole space sufficiently to extinguish the fire. And, also, it is impossible to approach a large fire close enough to obtain the full effect of the gas on it. Messrs. CONNELLY & NAYLOR, of Pittsburgh, have applied the gas in a manner which produces the most satisfactory results and which may be extended to use in the coal mines. Some of our mines now have water pipes laid into every gangway, and branches of portable hose into each breast, in order to combat the fires that are ignited, almost daily, from the blasts. Experience in the managing of the water has made this agent a reliable and moderately efficient one; but we think it highly probable that greater certainty and efficiency would be secured in the use of carbonic acid. In order to give some idea of its prompt and effective action, we take from the Pittsburgh *Commercial* the following description of some interesting experiments with it at Pittsburgh :

"The patentees recently fitted up an apparatus, near the grounds of the gas works, in Pittsburgh, where they conducted experimental tests in the presence of a number of citizens. In general terms, the machinery consists of a generator, where the gas is evolved; three receiving tanks, thirty inches in diameter by ten feet in length, and the connecting pipes. Some fifty feet distant was an excavation, twenty by thirty feet, partially filled with water, upon the surface of which was a 'skim' of crude oil, to test the efficacy of the gas in extinguishing an 'oil fire.' A pipe about an inch and a half in diameter, and supplied with small jets every few inches, was extended along each side of this tank, a little above the surface of the water.

"The first experiment consisted in lighting the crude oil, and letting it burn until the flame covered the entire surface. Immense volumes of black smoke rolled upward, the flames shot up ten or twelve feet into the air, and the heat was so intense as to drive the spectators back some fifty or sixty feet. At a signal from Dr. CONNELLY, when the fire was at its hottest, the engineer turned a valve, the carbonic acid rushed from the receivers, with a hissing noise, through the jets in the pipes, and in two or three seconds the flame was cut off as effectually as though a coating of ice had instently formed on the surface of the oil. As soon as the gas struck the flame, it was changed to a white steam, which made a striking contrast with the dense black smoke above it, as these two dissimilar vapors floated away and were gradually dissipated in the upper atmosphere. The second experiment was but a repetition of the first, and in both cases the extinguishment of the great volume of flame was as sudden and effectual as the snuffing out of a candle. A third experiment consisted in setting fire to a pile of shavings, kindling wood, oil barrels, etc, rendered highly inflammable by the addition of crude oil. When the fire had taken a firm hold, and was rapidly consuming the woody fibre, the gas was turned on—and the fire was out. The wood continued to smoke for a few moments, but there was no fire. The experiments were highly successful, and Dr. CONNELLY was warmly congratulated on his achievement.

"The pressure on the receiving tanks, at the first test, was—No. 1, 210 lb.; No. 2, 115 lb.; No. 3, 213 lb. No. 2 was really not in use. On the second test, the pressure was 180 lb. on Nos. 1 and 3. These tanks, or boilers, were made by Messrs. CARROLL & Co., and are of the best steel, put together as tight as joints can be made."

The Annual Meeting of the American Gas-Light Association.

IT will be seen by referring to the advertising columns that the next meeting of the American Gas-Light Association is to be held in the City of New York, on the 20th of October. Professor C. F. CHANDLER, of the Columbia College School of Mines, has consented to deliver an address before the Association, at one of the sessions during that meeting, which will be illustrated by experiments rarely seen by the general public, or even by the great body of gas manufacturers.

In his circular announcing this meeting, the Secretary of the Association, Mr. CHARLES NETTLETON, makes some very suggestive remarks, from which we quote, as to the demands of the public on the gas companies for better service :

"As the years roll on, the public, who are the patrons of the gas companies, become more and more exacting in this, that they demand better quality, by way of higher candle-power, for the same money, or a less price for that now furnished. This demand on the part of the consumers has, in England, Scotland and Ireland, become an earnest and serious matter. Such vigor does the movement manifest that the gas companies of London, acting in concert, with their immense capital and money influence, are not able to stem the current.

"We may fairly expect the same mania to reach the gas-consuming public of this country, and that the same demands and exactions will sooner or later be made on the gas manufacturers here.

"For some years past the Legislatures of some of the States have been importuned to pass laws against the interests of the gas companies, and supposed to be beneficial to the consumers. In many instances these efforts have resulted in the enactment of laws not of serious injury to the gas manufacturer. If the matter were to stop where it stands at present, none, or very little harm would be felt, and probably a benefit would result from past legislation; but the chances are that past legislation is but the flying scud before the storm."

There can be no question but that the public the world over does become more and more exacting in its demands on the gas companies, and it must also be confessed that there is, not unfrequently, some reason for complaint in the fact that too many of our companies are managed with a very supreme contempt for the teachings of science, and with no desire to adopt any improvement on the time-worn processes of our grandfathers. The motto of the times is PROGRESS, and gas companies can no more ignore it than can the owners of metallurgical works. In the latter case, the competition of rivals in the open market is an effective pressure which can scarcely reach the gas companies, except through the medium of public indignation, which, when excited, rarely stops at demanding merely what is just. True wisdom suggests that the managers of gas companies should *lead* in the path of progress, and show, by their readiness to profit by the teachings of science, that they are mindful of the public interests as well as of their company's dividends. A free exchange of professional experience in such meetings as that now announced will be one of the most potent sources of enlightened progress, and we shall be pleased to make the ENGINEERING AND MINING JOURNAL the medium of disseminating that class of information which will contribute to the same end. The meeting will be fully reported in our columns.

The Prospects of the Iron and Coal Trades.

OUR market reports of the iron trade for the two years past have been of such a uniform tenor that there is, unfortunately, but little difficulty in predicting the future for some months to come. The railroads, our largest consumers of iron, have largely changed their orders from iron to steel rails, and with a difference of but about $20 per ton against the latter, will, undoubtedly, continue to purchase them. Those that have the money with which to buy are almost all contracting for steel, while many of those that buy iron are in such a condition financially as to make their orders undesirable. The iron rail trade has received a check from which it is exceedingly doubtful if it will ever recover, for the tendency is more towards a greater reduction in the cost and improvement in the quality of steel than of iron, and at present prices there is a good profit on the latter, while the former is selling at but very little above cost. The substitution of the more durable steel rails for iron also reduces the amount required for renewals to about one-fifth what it would otherwise be, while the demand for new roads is, and will probably for a year yet continue to be, very light. There is no prospect of any great revival in the demand for machinery in the East for many months, but in the West, particularly in Colorado, Nevada and the other gold and siver mining districts the consumption has largely increased, not alone by the demand from the mines, but from the general requirements of increasing population and business prosperity. This demand is being met in a larger and larger degree by furnaces and mills in the West, so that it has but moderate influence on the Eastern trade, and, indeed, the furnaces of the West, Southwest and South, many of which can make iron at less cost than our Eastern works and have the freights to the Western markets in their favor, are absorbing nearly all the Western heavy iron business, and will continue to do so even when trade revives. New furnaces and works will be built there and find profitable employment while some of our Eastern works will be idle for want of paying orders.

The indications are, that the productive capacity of the Eastern States, including, of course, Eastern Pennsylvania, has far outgrown the Eastern consumptive demand; and as they have practically lost the Western markets, the prospects are far from bright for Eastern furnaces for some time to come.

We shall not now consider the effect an extended acceptance of the Reading Company's proposition would have on the Eastern iron trade, since we are informed by the President of the Company that the proposition has been made to but some half dozen small furnaces, and has been accepted by but three or four; and that, moreover, none of the iron would, in any case, be put on the market. Our correspondents still report a much greater number of furnaces than this as

willing to accept the iron-clad proposition of the Reading; but not only from the statement of the Company, but also from the low tariff of prices offered the furnaces for the manufacture of the different grades of iron, it is to be assumed the Company does not desire to go largely into the iron business.

The coal trade has suffered in the general prostration of business since the panic of 1873, but not to such an extent as the iron trade. The Combination that has controlled the Anthracite trade alone prevented the most ruinous competition in coal during the whole of '74 and the present year, and by its firmness and wisdom secured to consumers advantages in regularity of prices and supply that were probably more important than the low prices that would have prevailed but for the Combination; while it has made, at least, one industry profitable and prosperous during a time of almost universal depression and loss.

There can be no question as to the strength and coherence of the Combination, and, without any doubt, the programme of steady prices, possibly advancing slightly in November, will be maintained to the end of the season in anthracite. In bituminous coal, prices have long been as low as it is possible to have them with any profit to the mining companies. This low price has extended the market for these coals, and while the production of anthracite will this year fall, probably, at least one million tons below that of 1874, and about two million tons below that of 1873, the production of bituminous coal has steadily increased—a fact that seems to have been undervalued by the rulers of the Anthracite Combination. With the revival of business, the bituminous trade will receive a great impulse, and will assume gigantic proportions. It has fully demonstrated its ability to compete with anthracite in prices, and its substitution therefor has taken place in a large number of cases. Undoubtedly, this has been favored by the efforts of the middlemen, whose occupation, in the anthracite trade, having been destroyed by the Combination, devoted their influence and efforts to carry over their "trade" to the bituminous companies. For the balance of the season there will, probably, be no important increase in prices in any kind of coal; for stocks are everywhere large, and the prospect of revival of general manufacturing business is exceedingly unpromising.

A very general feeling prevails, that the production of anthracite must be curtailed before many months; indeed, it has already been decided on by the Delaware and Hudson Canal Company, and the Delaware, Lackawanna and Western Railroad Company. It now seems probable there will be a general suspension of mining in January, and, possibly, this will be taken advantage of to still further reduce miners' wages. The men have been working more steadily since the "long strike" than before, and though their wages were reduced ten per cent., their average earnings have been greater than ever before. There is certainly room for a further reduction of *miners'* wages, but not in the rate of remuneration allowed to outside or inside *laborers*. A reduction to the miners alone, would, probably, be accepted, rather than attempt another strike, while the terrible suffering of the early part of the present year is still so fresh in the memory of all.

Edward H. Tracy, C. E.

EDWARD H. TRACY, for several years past the Chief Engineer of the Croton Aqueduct of this city, died recently at Carmel, N. Y. He began his engineering career as a rod man, and from that humble position rose, by industrious attention to the duties assigned him, to be an assistant engineer under JOHN B. JARVIS, on the Chenango Canal, in this State. Subsequently, under the same chief, he assisted in the construction of the main line of our great aqueduct. He was afterwards engaged in several other important works, involving dock and railway construction. For the last five years he has been Chief Engineer of the Croton Aqueduct.

Lake Superior Mining Notes.

SINCE the opening of navigation mining interests along the North Shore have been awaking from the chill of winter, and now at nearly every point more or less work is going on.

Silver Islet has reached the 90-fathom level, and commenced to drift for expected bonanzas, but as yet has met no rich ore at this depth. From upper levels they are taking out some rich packing ore, improving in quantity. The principal yield this spring has been from the concentrations from the low-grade refuse, or No. 4 ore. The stamp mill and Frue's vanning machines are proving a success, turning out about a ton of concentrations per day, which assay from 500 to 1,300 ounces. What the real merit of these machines is cannot be told at present, until careful experiments have been made to prove that the results obtained are better than would have been obtained by the usual machines employed in well-planned dressing works.

As far as can be judged from mere inspection and testing the tailings by hand-washing, the work done by these machines appears excellent when they are in perfect working order. The fault that suggests itself at present is a too easy derangement of normal work, causing, on one hand, a low grade of concentrations, or large losses on the other; a fault that experience will probably overcome. The machinery for the second half of the mill is being put in place; so it would seem that the parties that know the best are satisfied with results. It is to be hoped that at some future time data of actual tests will be made public. Of course, the machines are not adapted to concentration of every kind of ore.

An explorer has reported to Capt. FRUE a discovery of very rich ore on the mainland, part of Silver Islet's or Wood's Location. The specimens are very rich; but as the man asked some very exorbitant price to show his discovery, nothing has yet been done to test its value, although very liberal offers have been made on the part of Silver Islet. Better late than never, work has been begun in earnest on the mainland, on the line of the Silver Islet vein, a few little scratchings being all the work done up to this time. So far the vein appears very much broken up and rich in base metals, but containing little silver, 18 ounces being the highest amount. The prospects look to me very favorable to develop a rich body of mineral at some point of the vein when a shaft shall be sunk.

The Duncan mine working on the Shuniah vein, three miles from Prince Arthur's, have followed the suggestions of the report made to them this spring, and set a force of about forty men at work to continue sinking and drifting, in the hopes of meeting other bodies of the rich ore that is found in the upper part of the mine. A small lot of rich ore taken out during the winter assayed $2,200 per ton. The second and third grades of ore have been sent to Silver Islet for a test with Frue's machines. Much of the vein rock shows specks of native silver or mineral. The work of sinking and drifting will be continued during the coming winter, and if sufficient ore is found to warrant the outlay, a stamp mill for crushing and concentration will be built next summer. At present the indications continue very good. Zinc blende containing some silver is met with in increasing quantities. At times the zinc blende is penetrated by wires of native silver. The mine is now under the management of Mr. COURTIS, M. E., of Wyandotte, Mich., and is principally owned by Boston parties. In fact it might be said of nearly all the mines of this district that they are owned and managed by parties from the States. An exception to this is Thunder Bay mine, not far from the Duncan. Mr. STEWART, the manager of the new stamp mill being built at Prince Arthur's, has also charge of this mine. A small force has been set to work cross-cutting at the bottom of the 60-foot shaft, also stripping the surface in line with the old outcrop that made this mine so famous for the large amount of native silver at the surface. Good stamp material has been taken out at the surface. A report came to hand that a large vein had been struck in the cross-cut and rich ore taken out, but from headquarters I learned that the vein was rich in base metals, with strong indications of silver, no assays having been made.

Mr. STEWART arrived at Prince Arthur's about the middle of June, and began work on a small stamp mill just outside the town. When complete it will have ten stamps, with pans, settlers, etc., and room to double the capacity if needed. It is hoped the mill will go into operation about Oct. 1. Duncan, 3 A mine, and Thunder Bay have given their dump piles on easy terms to assist in starting the mill. Although most of the ores of this district are better adapted to concentration and smelting, it is to be hoped that sufficient ore will be obtained to make the mill a success, as this whole district is full of good veins, which the success of the present enterprise will aid in developing, but whose failure may prevent some really splendid properties from being developed, from a little want of knowledge as to the cause of failure.

On many locations no work is being done at present, the parties waiting to see the results on neighboring claims.

Pie Island Mine is being worked with quite a force, the shaft being down some 60 feet, and cross-cutting begun. Some small leaders of very rich native silver and sulphide have been met with, but most of the mineral taken out is zinc blende and galena carrying but little silver. This mine promises to be one of the best if the surface indications are proved in depth. It is said that the parties already talk glibly of concentration works, smelters, reverberatories, etc., but it would be better if they would use a little common sense, and not waste money in furnaces that ought to be put in opening up stoping ground, no matter how rich the ore promises to be. Little veins half to one inch wide will hardly keep a concentration mill at work, leaving out the rest of the plant.

Explorations are being carried on at "Native 7," '17 K," Sturgeon and Trout Bay mines, and at all points some indications of silver or pretty specimens are reported, but none of them can be said to be producing mines as yet. The last reports from "17 K" were very favorable. This mine is on a vein of pink spar similar to that found at Silver Islet. Small quantities of silver ore have been found through the vein matter, but not in sufficient concentration to pay for working. The same may be said of nearly every location in this district.

This whole district is intersected with veins, some of them of immense size, but almost barren. These veins seem to follow the strike of the ridges of overlaying trap, breaking through the black slates generally at the foot of the trap bluffs; there are other veins crossing these, but the greatest action was parallel to the strike. The veins contain principally quartz, often amethyst, calc spar, colored pink or amethyst by manganese, fluor spar, generally green, seldom barite. At some mines brown spar occurs in quantity. Pyrites of copper and iron, zinc blende, black, resinous, and dark grey, the latter usually rich in silver. At the Pie the zinc blende is a dull red, but does not carry much silver. Galena is somewhat less abundant and usually gives high assays, probably from associated silver minerals. Nicolite and other nickel-bearing minerals are found at Silver Islet, 3 A Mine and Pie Island.

At one locality native bismuth is found with some silver. It is probable that many rich veins remain undiscovered, and others whose outcrop show only small quantities of mineral would prove to have rich bodies, if explorations were carried on beyond a shallow pit or single surface cross-cut. The roughness of the country and deep growth of moss make prospecting not only difficult and unsatisfactory, but very expensive where veins are to be traced in distance.

At the Jack Fish Lake gold mines, Captain PLUMMER is at work tracing the vein to find the most favorable spot for sinking a shaft. Some very rich ore has been found carrying native gold.

Other properties of this district are waiting for the result of explorations of Captain PLUMMER, and if they prove the property rich many other locations will be explored also.

At Black Bay, veins rich in galena, but very poor in silver are already located but undeveloped. The Enterprise Mine have let a contract to sink their shaft 100 feet deeper in the hopes of finding the vein again below. At Red Rock, Neepigon Bay, parties are at work exploring a vein, and, it is reported, have found some rich ore, or probably rich spots in the vein.

At Pie River the vein bears a dark red zinc blende, galena, and some rich silver mineral not determined. Some specimens said to be very rich contained less than $20, while others of the same appearance yielded considerable silver.

The diorite from Silver Islet vein contains at times a large amount of graphite, while the dolomite from the Duncan Mine contains small inclosures of anthracite. All the phenomena of these veins offer unusual opportunities for the study of the formation of vugs, "horses" and vein deposits, together with rare paragenesis of minerals.

On Isle Royale the explorations among the ancient workings have developed some large masses of copper, and already some tons have been taken out; also rich rock has been found that bids fair to give large returns. The most interesting features here are the ancient remains of former mines, and it is to be hoped that Captain DAVIS will make notes of the character of the openings and give them to the public, as it is said the present work is bringing much to light which a short time will cover again beyond study. "EZUEST."

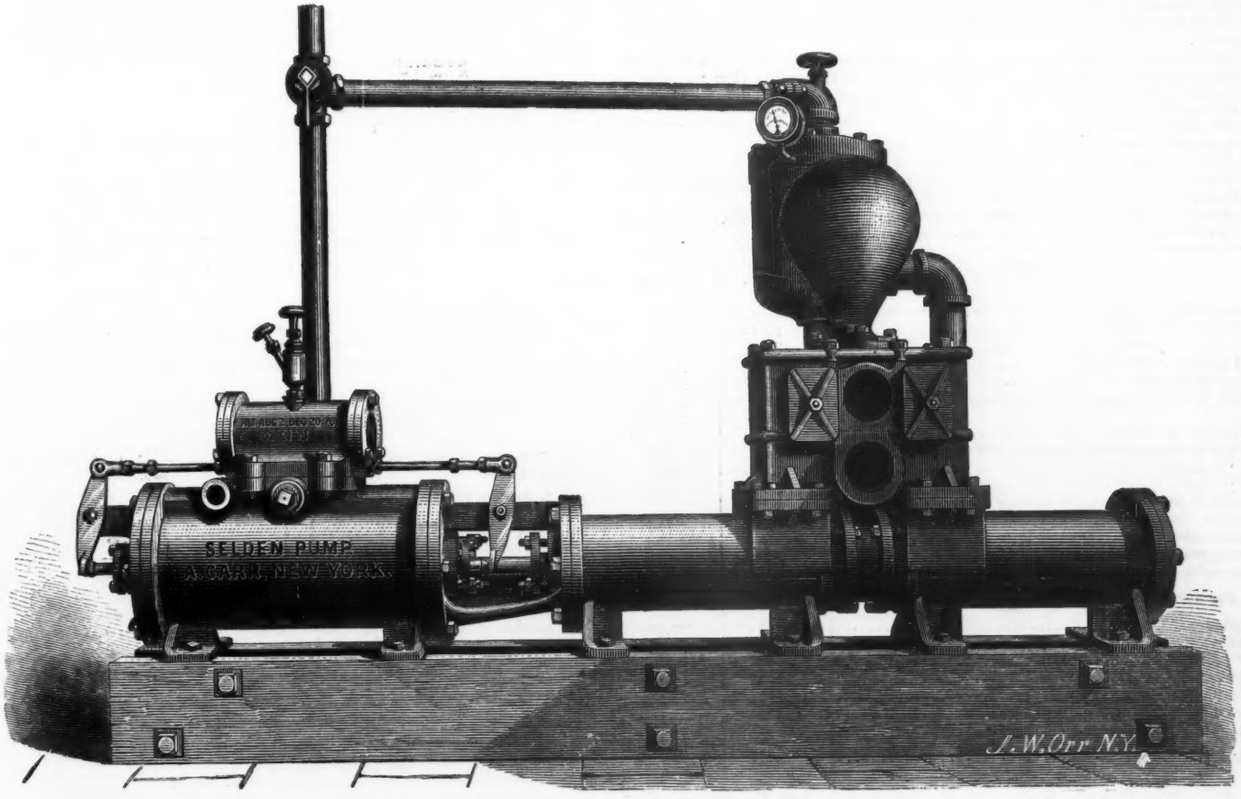
The Selden Pumping Engine at the New Brunswick (N. J.) Water Works.

Manufactured by A. CARR, 44 Cortlandt St., N. Y.

WE have many times had occasion to note the favor which the Selden pumping engine has found as a mine pump, on account of its simplicity and durability; a good repute that has extended far beyond the limits of our own country, for we find two of these pumps working with satisfaction in the German coal mines. Its application to water works is, however, more recent than its use in mines, and though the conditions of service are not very dissimilar, yet they vary sufficiently to make a notice of the pump which has, for the last two years, been at work on the New Brunswick (N. J.) Water Works, of interest to many of our readers.

Many of the water works of our large cities are now supplied with the most costly and perfect specimens of pumping engines; indeed, the object in some cases appears to have been to procure that engine that would give the highest "duty test," regardless of its cost. We have several times published in the ENGINEERING AND MINING JOURNAL tabular statements of the cost of, and work performed by, several of these best known engines, from which it is seen that their cost, in many instances, runs up into the hundreds of thousands of dollars, and few of them cost less than thirty or forty thousand.

The water works of small towns cannot afford to indulge in these luxuries, hence we have a call for a second class of pumps which, though not yielding the high duty returns of the more expensive machines, are far less costly in the first instance, and from their simplicity are durable and little liable to accident or interruption. The Selden direct-acting pump, as now working at New Brunswick, comes under this class. Its principal dimensions are as follows: steam cylinder, 36 inches diameter, 72-inch stroke; there is one 22-inch diameter plunger working in two cylinders, as shown in the accompanying illustration.



THE SELDEN DIRECT-ACTING PUMP.

The pump forces water to a vertical height of 128 feet 6 inches, through 7,779 feet of 16-inch diameter column pipe, the pressure in the column pipe being about 56 to 60 pounds and the steam pressure about the same. The air chamber is a 16-inch column pipe 25 feet long, instead of that shown in the cut. The engine makes from twelve to twenty strokes a minute; at 14½ strokes it is calculated to deliver 100,000 gallons an hour, and so perfect is its working that it delivers within 1½ per cent. of its theoretic capacity. The engine exhausts into a very simple form of condenser, (the Craig and Brevoort) in which a vacuum of 20 to 25 inches can be counted on. The condenser pump—a small sized Selden—10 inches diameter, 16-inch stroke, supplies sufficient water when making the same number of strokes as the large engine. Steam is supplied by two horizontal tubular boilers, and a KELLEY'S Patent Sectional Boiler.

This pump complete, erected in place, and including two tubular boilers, (the foundations for pump and boilers being furnished) cost but $15,000. And should the work of the engine make it an object to secure greater economy in the consumption of fuel than can be accomplished in the single condensing engine, this may be compounded by adding a smaller size steam cylinder, from which the steam will exhaust into the present cylinder. The cost of this addition and alteration has been estimated by the builder at $2500, and the saving in fuel to be effected thereby at 30 to 35 per cent.

The following details apply to all sizes of the Selden pump, and are of general interest:

"The steam piston has self-adjusting spring packing, requiring no attention whatever from the engineer in charge. There are two steam valves, the auxiliary and main valves, both flat faced slide valves, working on a common face. Their simplicity and certainty of action and the ease with which they can be faced after much use, gives them a great advantage over the more complicated forms of valve movement. No "hand lever" or "starting bar" is needed with these valves.

"The easy, smooth manner in which the pump reverses at the end of each stroke, and the consequent absence of pulsation in the discharge pipe, constitutes one of its especial claims as a water works pump, where the 'thumping' action of a badly-constructed pump is so mischievous to the mains. This steady and continuous flow in the force mains is produced partly by the proper proportioning of the steam passages, and partly by the arrangement of the water valves.

"In this pump, the steam and exhaust ports are opened simultaneously at the commencement of the stroke and remain open to the end, when they are similarly opened for the return stroke.

"The result of this is, that a steady flow of steam follows the steam piston, giving it a uniform velocity which is communicated to the water in the main.

"The great shock delivered to the pump and the water in the mains by instantly admitting steam and releasing it from the opposite end of the cylinder, through large ports, is here totally avoided; in this pump the steam and exhaust passages are reduced to the size found necessary by actual experience to ensure a free admission of steam when the pump is doing its maximum duty, thus avoiding the waste resulting from filling and emptying large ports, and producing the easy admission and emission of steam which makes this pump so remarkably free from thumping in its action.

"The pump proper consists of two water cylinders, having one plunger working into both. For sizes over six-inch plunger the suction chamber is under the cylinder, the bed being cast hollow for this purpose; between the cylinders and the top of the bed which forms a common chamber for both, two valve plates are placed on which the suction valves work; two similar plates (exact duplicates) are placed over the cylinders and covered with a discharge chamber common to both, all the valves being exact duplicates, and consequently interchangeable. These plates are very easily accessible for cleaning or removal.

"The valves have a very short lift, the requisite area of discharge being obtained by using a number of long narrow ports with a length of about six times their breadth, thus, in the aggregate, presenting a very long admission and emission edge. These valve seat easily and quickly, so that the plunger reverses at once against the column of water before it acquires any perceptible velocity, and before the flow of water in the discharge main has noticeably stopped.

"The valves are flat rectangular pieces, either of brass or faced with rubber or leather, and can be taken out from the small pumps in a few seconds, and from the large water works pumps, in from one to two minutes. In emergencies, flat pieces of wood can be used till duplicate valves are procured."

Standing by the large pump above referred to, while it was making 16 strokes a minute, with a head of 128 feet on them, the movement of the valves could not be heard, or any jar felt, which speaks sufficiently for the smooth working of the parts.

Notes on an Engine Test.

THE writer has recently received a copy of the *Fifth Annual Report of the Cincinnati Industrial Exposition*, and has read with great interest the account of the competitive test of two automatic cut-off engines, the "Harris" and "Cooper." This is, so far as the writer knows, one of the most thorough reports ever made by a jury appointed to investigate the claims of rival manufacturers at a local exposition. The gentlemen who prepared it are deserving of great commendation, not only for the painstaking manner in which they made their experiments, and the candid spirit which they displayed in discussing the results, but also for having presented it in such complete detail, that it is easy for any one to check the calculations, and verify or disprove the figures given. Some time has been devoted to this verification by Mr. THEBON SKEEL and the present writer, and they have found themselves unable to agree with all the conclusions of the jury. At the same time, some points have been noticed which it may be well to discuss, with the idea of showing how this fine report might have been still further improved. The writer, in submitting this discussion, appreciates the fact that it is much easier to criticise a published paper than to prepare it, and also that there is room for two opinions on many of the questions noticed. It is believed, however, that discussions of methods of testing machinery and computing results are generally of value, except when they are maintained on mere frivolous pretexts. In the present case, criticism will be of especial value, if it tends to suggest improvements in the manner of conducting experiments on future occasions.

In the accompanying table, it is believed that all the data necessary for the verification of the matters criticised are given. In this table, all figures enclosed in parenthesis have been computed by the writer, the others being taken from the report. This arrangement gives prominence to those results in which the writer ventures to dissent from the conclusions of the jury.

The reader is referred to the original report for a detailed account of the trials, which lasted eight hours, in the case of each engine. During the trials, the coal consumed, the water pumped into the boilers, the temperatures, and the reading of the dynamometer were noted, indicator diagrams being also taken at frequent intervals. At the conclusion of the economy trials, friction diagrams were taken, and experiments were made in regard to the effect of a gradually decreasing steam pressure on the speed of the engine, the load remaining constant.

The economy trial of the Harris engine was made between the hours of 8:45 P. M., October 3, and 4-45 A. M., October 4, 1874.

That of the Cooper engine was from 4:20 P. M., October 6, to 12:20 A. M., October 7.

In looking over the elaborate tables of observed data, and the admirable descriptions of the machinery and apparatus, it is noticeable that no mention is made of the following details, which will generally be considered of interest and importance:

Weight of ashes and refuse from coal.

Length of steam pipe, and whether or not it was protected.

Where steam was obtained for working the feed pumps.

How jacket of Cooper engine was supplied, and water of condensation withdrawn. (*Note*—The Harris engine was not jacketed.)

The amount of steam condensed in the jacket of Cooper engine.

Whether the cylinder heads of the Cooper engine were lagged.

DIMENSIONS.	HARRIS.	COOPER.
Diameter of cylinder (inches)	16 1-16	16
Length of stroke "	48	30
Clearance (cubic feet)	.1628	.126
Cut-off in parts of stroke	.20658	.2606
Part of stroke completed, at point of release	.99148	.95103
" " " " compression	.95628	.84212
Number of boilers	2	2
Total heating surface, (square feet)	983	983
" grate " "	25.4	25.4
" calorimeter "	4.4	4.4
Ratio of heating to grate surface	(38.7)	(38.7)
" calorimeter " "	(.173)	(.173)
Revolutions of engines per minute	60.1083	84,308
Temperature of air	73°72	67°393
Barometer, (inches)	29.46	29.497
Pressures above the Atmosphere in lb. per square inch.		
Boiler	70.47	70,326
Initial	64.285	70.051
At point of cut-off	56.68	57.265
Terminal	3.074	7.114
Mean effective	25.3775	29.1801
Mean back, independent of cushion	.466	.586
At end of cushion	33.597	83.55
Barometric	14.435 (14.397)	14.453 (14.425)
Hourly Consumption in Lb.		
Coal	281.25	312.5
Water, by tank	2186.87	2290.30
Steam condensed, in extreme length of steam pipe, approximately		(30.)
Water used by engine	2186.87	(2260.31)
Water, by indicator	1694.06 (1750.)	1572.23 (1653.)
Steam condensed for work	(192.1)	(163.5)
Total water accounted for by indicator	1694.06 (1942.1)	1572.23 (1816.5)
Per cent. of tank measurement accounted for by indicator	77.46 (88.8)	68.645 (80.4)
Horse-Power.		
Total	118.932	113.568
Indicated	74.9341	74.9428
Net	65.8901	61.8442
" (Corrected, by allowing same friction pressure for Cooper as for Harris, and deducting 5 per cent. for friction of load	65.8901	(66.588)
Ratio of corrected net to indicator power	(.8793)	(.8889)
Lb. of Water per Hour.		
Per indicated horse power	29.1836 (30.16)	30.5604
Per net horse-power	32.8435 (33.19)	36.6471 (36.55)
Per corrected net horse-power	**(33.19)**	**(33.95)**
Lb. of Coal Burned per Hour.		
Per square foot of grate	(11.1)	(12.5)
" " " heating surface	(.572)	(.634)
" " " calorimeter "	(128)	(142)
Lb. of Water Apparently Evaporated per hour, per lb. of Coal.		
From temperature of fuel	(7.78)	(7.32)
From and at 212°	(8.64)	(7.98)
Fraction of heat imparted by fuel (as accounted for by the indicator), utilized in overcoming resistance	.14906 (.152)	.15535 (.157)

DISCUSSION OF THE RESULTS.

I.

It will be seen that the initial pressure in the Cooper engine is recorded as being practically the same as that in the boiler. As this is scarcely possible, under the circumstances, the record seems to indicate either an error in estimating the initial pressure, or some fault in the measuring instruments.

II.

The formula employed by the writer in computing the barometric pressure is as follows:

Pressure in lb. per square inch

$$= \frac{\left(\begin{matrix}\text{Height of mercury}\\ \text{column in inches}\end{matrix}\right) \times \left[1 - .0001085 \times \left(\begin{matrix}\text{Temperature}\\ \text{of air} \quad -32^\circ\end{matrix}\right)\right]}{2.03759}$$

In this expression no correction is applied for the expansion of the scale, as the kind of barometer employed was not specified; and this may account for the difference in the figures, in the above table. It seems proper to add, that minute differences of this kind are of no practical importance, since, if the pressure is computed to the nearest tenth of a lb., it will agree well in point of accuracy with observed pressures and temperatures taken with the ordinary measuring instruments.

III.

The difference in the amount of water used per hour, computed by the formula on page 69 of the Report, probably arises principally from the use of different values of the density of steam. Those employed by the writer are taken from tables based on the experiments of FAIRBAIRN and TATE, to be found in the 3d edition of PORTER'S "Treatise on the Steam Engine Indicator." It is to be observed, also, that the weight of a cubic foot of distilled water of maximum density is not quite 62½ lb., as assumed in the report. The formula referred to above seems to be incorrectly printed in the report, and should probably read:

$$Vs = (V + V^1) \times D - (V^2 + V^1) \times D^1$$

where

Vs = cubic feet of water used per hour.
V = cubic feet swept through by piston per hour, to the instant of release.
V^1 = cubic feet of clearance and waste room per hour.
V^2 = cubic feet swept through by piston per hour, from closure of exhaust port to end of stroke.
D = density of steam at instant of release.
D^1 = density of steam due counter pressure.

IV.

The manner of computing the weight of steam condensed per hour is explained below:

Work done by expansion ÷ total resistance overcome

$$= 1 - \frac{\left(\begin{matrix}\text{Mean total pressure up}\\ \text{to point of cut-off}\end{matrix}\right) \times \left(\begin{matrix}\text{Fraction of stroke before}\\ \text{steam is cut off}\end{matrix}\right)}{\text{Mean total pressure during stroke}} \quad \ldots(1)$$

The total work due to expansion

$$= (\text{above ratio}) \times (\text{total horse power}) \quad \ldots(2)$$

The number of units of heat per hour equivalent to this work

$$= \frac{1{,}980{,}000 \times (\text{horse power due to expansion})}{772} \quad \ldots(3)$$

The lb. of steam condensed per hour, for the work done by expansion

$$= \frac{\text{Equivalent heat, by equation (3)}}{\text{Latent heat in a lb. of steam at terminal pressure}} \quad \ldots(4)$$

The results of these rules are appended.

	Harris.	Cooper.
(1.) Ratio of work done by expansion to total resistance overcome	.605	.534
(2.) Horse power due to expansion	71.9	60.7
(3.) Units of heat per hour equivalent to this work	184,407	155,681
(4.) Lb. of steam condensed per hour for the work done by expansion	192.1	163.5

V.

The true measure of the economic performance of an engine is the number of lb. of steam required per hour per net horse-power. It will be observed that the figures given for this item by the writer differ somewhat from those in the report. In the case of the Harris engine, the difference seems to be due to a numerical error in the report. For the Cooper engine, however, the writer has computed a different value for the net horse-power by assuming that the friction pressure was the same as in the case of the Harris engine. According to the experiments made by the jury, the observed friction pressures were

Harris.	Cooper.
1.8885	3.8328

It is stated in the report that the foundation of the Cooper engine had settled, and caused the journals to bind. Without presuming to question the ac-

tion of the jury in charging the effect of this poor foundation to the engine, it may be remarked that one engine is as likely to have a good foundation as the other, when set up in a factory, so that, for a commercial comparison, the figures given by the writer may be more correct.

VI.

The apparent evaporation per lb. of coal "from and at 212°" of the boilers used with the Cooper engine was 66-100 lb. less than that shown by the Harris boilers. In the report, this is attributed to the action of "patent fuel saving grates" used in the former case. It might have arisen from a slight error in measuring the coal *consumed* during the experiments, or, if all other things were equal, it would be inferred that the Harris boilers "primed" about 8 per cent. more than those used with the Cooper engine. This, if true, would injure the performance of the Harris engine more than 8 per cent.

At all events, it is evident that the neglect to test the *quality* of the steam throws uncertainty upon the comparative results.

VII.

The calculation, in the report, of the mechanical equivalent of the heat in the steam accounted for by the indicator, seems to be incorrect. The formula used is as follows:

Units of heat per hour in the steam

$$=\left(\begin{matrix}\text{Lb. of water used per}\\ \text{hour, by the indicator.}\end{matrix}\right)\times\left[\left(\begin{matrix}\text{Temperature of}\\ \text{evaporation.}\end{matrix}\right)+\left(\begin{matrix}\text{Latent heat of}\\ \text{evaporation.}\end{matrix}\right)\right]$$

The writer submits the following as being, in his opinion, the correct expression:

Units of heat per hour in steam accounted for by the indicator

$$=\left(\begin{matrix}\text{lb. of water used}\\ \text{per hour, by the}\\ \text{indicator.}\end{matrix}\right)\times\left[\left(\begin{matrix}\text{Total heat in one lb. of}\\ \text{steam at the termi-}\\ \text{nal pressure.}\end{matrix}\right)-\left(\begin{matrix}\text{Total heat in one}\\ \text{lb. of feed wa-}\\ \text{ter.}\end{matrix}\right)\right]$$

+(Heat per hour equivalent to the work done by expansion.)

Below are given the results of the calculation:

	HARRIS.	COOPER.
Units of heat per hour, equivalent to total horse-pwr.	304,951	291,358
Units of heat per hour in steam accounted for by the indicator	2,003,207	1,859,094
Ratio of these quantities, being fraction of heat imparted by fuel (as accounted for by the indicator), utilized in overcoming resistance	.152	.157

These figures are not *comparative*, as one engine had a *steam jacket* and the other not.

VIII.

The following formula is given, in the report, for determining the necessary cushion pressure in the Harris engine:

Ultimate compression pressure in lb. per square inch

$$=\frac{(\text{Weight of reciprocating parts in lb.})\times(\text{Mean velocity of piston, in ft. per second,})}{\text{Area of piston in square inches}}$$

$$=\frac{900\times 8}{202.6}=35.54$$

The following method of calculation seems to the writer to be the correct one:

Pressure, in lb. per square inch, required to give reciprocating parts the velocity of the piston, when at half stroke, in the time required to make a half stroke

$$=\frac{\left(\begin{matrix}\text{Weight of reciprocating parts}\\ \text{in lb.}\end{matrix}\right)\times\left(\begin{matrix}\text{Velocity of piston in feet per second,}\\ \text{when at half stroke,}\end{matrix}\right)}{16.08\times\left(\begin{matrix}\text{Area of piston in square}\\ \text{inches,}\end{matrix}\right)\times\left(\begin{matrix}\text{Time in seconds, required to make a}\\ \text{half stroke,}\end{matrix}\right)}$$

$$=\frac{900\times 12.6}{16.08\times 202.6\times .25}=13.08$$

At the time cushion commences, the forces acting are the steam pressure, 3.08 lb., the inertia, which may be considered as constant during this distance, and equal to 13.08 lb., the friction of the engine, 1.89 lb., and the mean cushion pressure, 20.52 lb., approximately. The first two forces tend to urge the piston forward, and the other two to retard it, so that there is a difference of 6.25 lb. per square inch in favor of retardation, which is the excess of cushion, and seems to allow a judicious margin.

IX.

On page 71 of the report is a comparison of the performance as determined by the jury, with that of two similar engines tested in New York in 1869. This comparison is for the steam used per indicated horse-power per hour. The real basis of comparison is the net horse-power, and this is given below, from the *30th Annual Report of the American Institute:*

	Harris.	Cooper.
1874	33.19	33.95
1869	28.88	29.23

The *quality* of the steam was not determined in either of these tests, so that the value of the results, both *absolute* and *comparative*, is somewhat diminished.

X.

The only difference of much importance between the engines tested was the jacket of the Cooper engine. As the report does not state the manner in which it was operated, nor the amount of steam condensed in it, these experiments are not sufficient to determine the effect of a jacket under the best conditions, but in so far as anything can be inferred from them, they seem to indicate that the use of a jacket on a non-condensing engine, under these circumstances, is not beneficial.

RICHARD H. BUEL.

80 Broadway, New York, August, 1875.

The Penn Gas Coal Company has its railroad connection made with the Connellsville at the mouth of Sewickly, and is operating three mines within two miles and a half of West Newton. They will probably work two hundred hands in these mines. —*Railway World.*

The first Mention of the Application of Gas to Lighting Streets is, we believe, in "Jars' Voyages Metallurgiques," in 1765, when the manager of a coal pit at Whitehaven, where the fire-damp was carried to the surface through iron pipes, "proposed to the magistrates of the town to carry separate pipes from the pit into each street of the town, and by that means light all the streets during the night."

Provisions for the Health and Comfort of Miners.—Miners' Homes.*

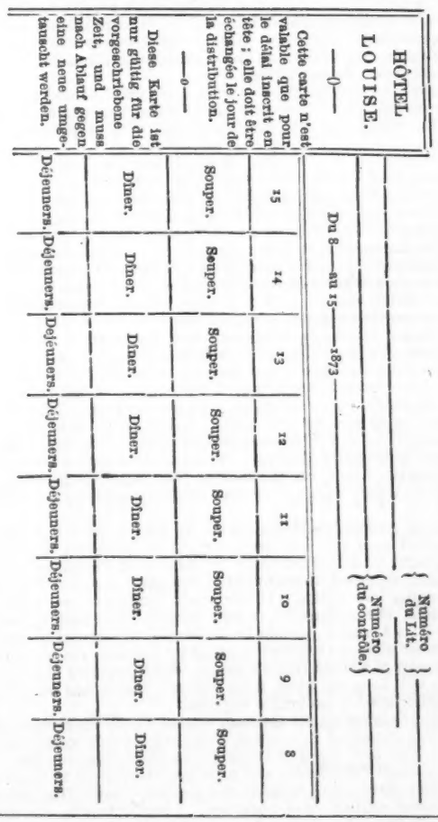
BY PROF. WM. P. BLAKE.

WHEN we consider the efforts made in Europe to promote the physical well-being of the working classes, the question is suggested whether in this country, where, theoretically, every man is peculiarly the arbiter of his own destiny, we may not be too prone to expect every man to take care of himself, and neglect to make those provisions for the welfare of the employed demanded alike by enlightened economy and humanity. In the older countries, where the disproportion between capital and labor is greater, and the working classes are more dependent, their welfare largely occupies the attention of employers. The subject is involved in the problem of the just relations of capital and labor, and we are rapidly approaching the time, if we have not already reached it, when a generous, paternal interest in the welfare of the employed should be more generally manifested. It is a subject which is of special importance to mine-owners and engineers in this country, especially to those located in the coal regions. My own attention has been particularly directed to it by a visit made to the Hassard collieries, a few miles from Liége, Belgium, under the direction of M. ANDRIMONT. This celebrated engineer has established a comfortable home for the miners near the mouth of the shaft of the mine. It has been highly successful and beneficent in its results, and may to a great degree be regarded as a model for such undertakings.

It is known as "Hotel Louise," this being the name of Madame d'ANDRIMONT, who laid the corner-stone of the building, April 4, 1871. The structure is of brick, upon three sides of a square, and three stories high. The ceilings are high; it is thoroughly well ventilated, and is fire-proof. It has lodgings for 200 men, and all above the first floor. The first or ground floor is used for the restaurant, the coffee room, the reading room, library, store and the office. The basement is divided off into kitchen, laundry, bathing room, store room, etc. Each miner has a separate room, with separate bedding and clothing, all marked with the number of his room, by which number the occupant is generally known.

The miners wear a special dress into the mine, and remove it on coming out. When they reach the hotel at the end of the shift they go to the bath-room and bathe, each in a small compartment. Hot and cold water are plentifully supplied in movable tubs. The soiled mining clothes are removed to the laundry, and are neatly washed and ironed in the course of the next day and placed in the miner's room. The miners wear sabots in the mine, and leather boots or shoes above ground. These are nicely blacked daily at the hotel, and kept in readiness for the miner when he dresses for the surface. The men are not allowed in the restaurant or other apartments of the hotel until their toilet is made.

Meals are furnished at a fixed rate. The food is wholesome, well-selected and well cooked, as I can testify from actual trial. The miner is charged only with the meals that he takes—that is, he does not pay by the day or week, but is furnished with a printed card upon which each meal taken is registered, and at the end of the time named the account is squared. These cards or tickets are in the subjoined form, and entitle the holder to the privileges of the hotel for the eight days of which the dates are given, by stamping in the figures when the card is issued:


HÔTEL LOUISE.
Cette carte n'est valable que pour le délai inscrit en tête; elle doit être échangée le jour de la distribution.
Diese Karte ist nur gültig für die vorgeschriebene Zeit, und muss nach Ablauf gegen eine neue umgetauscht werden.
Du 8—au 15—1873
Numéro du Lit.
Numéro du contrôle.
Souper. Dîner. Déjeuners.
15 14 13 12 11 10 9 8

New cards are issued at the end of the time, and the old ones are surrendered. Whenever a meal is taken the clerk of the hotel punches a hole

*A paper read before the American Institute of Mining Engineers at the New Haven Meeting, February, 1875.

through the proper square under the date. At the end of the time the card shows exactly how many and what meals have been taken.

Upon the back of this ticket the miner is informed, by a printed notice in French and in German, that no workman is permitted to lodge at Hôtel Louise unless he works regularly for the company and conducts himself honestly and properly toward his fellow-workmen and the officers of the establishment.

The hotel has proved a success. Its comforts are prized by the men, and it helps to secure an excellent class of miners for the company. The library is an excellent one; the books are well selected, are substantially bound, and are well used. The total cost of all this wholesome comfort was stated to me as only one franc and twenty centimes a day.

At the store connected with the hotel the men can purchase any clothing or delicacies of which they have need at very low rates. The cheapness of sabots, of boots and shoes, and of well-made Cornish hats was surprising.

But this is only one of many prominent examples of provision for the health and comfort of workingmen abroad. To give only a general view of what has been accomplished at the great industrial and metallurgical establishments would require more space than can appropriately be given in conjunction with the technical papers of the Institute. The subject is a broad one, and much has been written upon it since the lamented Prince Consort more fully aroused the attention of the public to it by the model dwellings which he erected at the Great Exhibition in 1851. Those who visited the Paris Exhibition in 1867 will remember the miners' cottages, with their furniture, shown by the Blanzy Coal Mining Company as examples of the 679 cottages of the kind which they had erected at the works, and rented for 54 francs a year, including fuel and a garden privilege.

My object is not, however, so much to enter into the details of these and other efforts for the improvement of the condition of miners, as it is to bring the subject generally to your attention as one of great and increasing importance in many points of view.

REMARKS OF PROF. EGLESTON ON PROF. BLAKE'S PAPER.

The improvement of the condition of workmen, which is the subject of Prof. BLAKE'S paper, is one in which everyone must feel the greatest interest. There is, however, something beside their mere physical welfare, which is the topic of Prof. BLAKE'S paper, which requires the most earnest attention. I do not know of any place where laundry privileges seem to be carried out in so great perfection, or where such special attention is given to the restaurant department as in the Hotel which he has described. These are, however, only insignificant items, so far as the general well-being of the men is concerned. Something requires to be done to elevate their moral as well as physical condition; and unless it is done, it is impossible to keep up their *morale* for any great length of time.

To ameliorate their condition, it is not sufficient to provide restaurants and laundries, although good food and cleanliness are very important moral as well as physical correctives. But the world cannot generally depend upon unmarried men, for whom these provisions are made at Hôtel Louise. It is generally conceded that, to keep a skilled or even an ordinary workman for any length of time in the same place, he must be married.

He should be able to hope that his family, which is as dear, and perhaps dearer to him, than those of persons occupying higher stations in life, will be reasonably provided for in case of his death; or that, if he is disabled by accident, there will be some expectation that he will either receive treatment which will cure him, or, at least, will render him as capable as possible, under the circumstances, of supporting his family. He wishes to be assured that his family will be provided for in case of their sickness, that his children will be educated, that his dead shall have a decent burial.

In those establishments where the best work is obtained, some kind of rational amusement is provided, which not only elevates the tone of the society which surrounds him, but keeps him with his family, and, what is quite as important, from worse things.

It is not always possible to combine all this in any one institution; nor are they anywhere combined, but each one separately does exist in the highest state of perfection in different parts of Europe. As a student, my attention was very early called to this subject, and the condition of the working people has been a subject of great interest to me ever since. The establishments for ameliorating the condition of workmen differ in different countries. Most of them have been founded for the sake of keeping the men quiet and satisfied where they are. No one is applicable in this country as it exists abroad. There are too many races here, each one of which has its own national customs and amusements, and they refuse as persistently to blend as oil and water.

In the Georg-Marien Hütte, in Hanover, each workman is provided, at a low rent, with a house built of slag brick, which is of a gray color, and is light and singularly free from dampness, and makes a house of exceedingly pleasant exterior aspect. These houses are arranged for families of different sizes, and their interior is in every way comfortable and commodious. They all have a cellar, and are one story and an attic high. Every attention is given to their proper sanitary condition, and their arrangement in streets is most convenient. The plans of these houses attracted very great attention at the Vienna Exposition, and I think, on the whole, are the best of their kind, furnishing a comfortable, commodious home, where more than ordinary sanitary regulations are carried into effect.

In certain parts of Austria there is a choice in such houses, the best being given to those married men who have been longest in the works, and who have had the least complaint made against them for abuse of the sanitary laws.

Of the mere matter of houses, these form the two most conspicuous examples that have fallen under my notice. Under such conditions as these, where houses are furnished, the restaurant system becomes impossible; and it is doubtful whether it is desirable, except in the case of unmarried persons, who are, in Europe, almost always transient men, and, therefore, are not a very desirable class. The part of the old Guild System, which requires that the workman shall travel, is still in moral force, from the fact that it has become a custom, though the *Meisterstück* is no longer required.

It is characteristic of almost all the German works, where the system of looking after the workmen is carried into effect, that they provide some kind of rational amusement. The best types of these are at Georg-Marien Hütte, where the workmen have a small *Bier Garten*, and have beer furnished to them at cost price, and where they have also a theatre and a concert hall. The actors and musicians are composed exclusively of workmen. I visited this theatre and *Bier Garten*, and examined it in detail, and I was told by the director of the works that the musical and theatrical performances of the men were creditable in the highest degree, and that the families of the officers of the works were in the habit of visiting the theatre and concerts as a matter of amusement; and that since the erection of the theatre there was an appreciable elevation in the condition of the men.

The bier-garten system, or the pleasure garden of the Anglo-Saxon, is most extensively and completely carried out in BORSIG'S Works, in Silesia. A garden, comprising a number of acres, laid out in the most artistic style, and planted with trees and flowering shrubs, is provided by the works. It is arranged on the same general plan as the pleasure gardens of the great European cities, but, of course, not so luxuriantly fitted up. This garden is provided with the ordinary amusements for children, with handsome arbors and shade trees; and on holidays a band of music, composed of workmen, plays at stated intervals. All kinds of amusements, for grown people as well as children, are provided, such as is usual in gardens of that character in Europe. All the buildings are decorated artistically, and with great taste, and are filled in the evening and on holidays with men, women and children, including the families of the officers of the works.

On special occasions there are grand demonstrations of music, and special decorations of the gardens, all of which is carried out by the men, under proper direction. Such a garden as this, filled with families engaged in all kinds of harmless recreation, goes far to make the men and their families respectable, and is certainly an interesting spectacle, which, unfortunately, cannot often be seen in any country inhabited by Anglo-Saxons. Its influence is seen, directly, in the product of the works. The men rarely leave of their own accord, and their general *morale* is no small part of the reason why the works turn out some of the highest grades of iron manufactured in Germany.

The free hospital and school systems are carried out in their greatest perfection in England, where day and night schools have been established by the proprietors of some of the works, under the direction of clergymen and government school masters. I became so much interested in some of these schools, that after examining them in a good deal more than the ordinary routine of arithmetic, etc., I offered a prize for a written examination on subjects which I proposed to them, and these examinations were afterwards sent to me. The children of this school, which was a day school, were none of them over 13 or 14 years of age. The examinations would, certainly, have done credit to the lower classes in our colleges and to the universities abroad.

The night schools were attended principally by persons over the age of sixteen. The parts of these schools which principally attracted my attention were the drawing classes; they were organized to teach not only free hand sketching, but to some extent geometrical and mechanical drawing. The interest excited even among the older workpeople of both sexes was surprising, and their performances highly creditable. The school houses are so arranged as to be easily transformed into a church on Sunday, and I certainly never saw a more quiet and devout congregation than that assembled there for worship. I visited the families in their homes with the clergyman in charge, and as is not unusual in England, I frequently found that the grandfather of the family had been a workman in these same works, and the grandson was looking forward to the same position. There was connected with these works a hospital system, a physician being paid by the works, the men being allowed the liberty, in all ordinary cases, of being treated in a hospital building or in their own homes. A system, which I have seen nowhere else, was adopted here with reference to boys who had become maimed in the works so as to render them unfit to become workmen. They were specially trained to occupy office positions, or educated for occupations suited to their condition. One of the brightest boys I saw had lost a leg by some accident about the rolls, and was being trained to occupy the position of book-keeper. My attention was specially attracted to these works because I had gone to Staffordshire to ascertain how their iron was made, as it was of superior quality, and much better than that of their neighbors who were using the same materials. My impression, of course, was that the superiority was owing to some peculiar process. After visiting the works carefully I saw nothing in any way different from the other works of the neighborhood, and I became convinced that the whole secret lay in these excellent arrangements for elevating the moral and physical tone of the workmen. The proprietor of these works informed me that he had spent £30,000 in the erection of the necessary buildings, and in carrying out the plans which were the most perfect that I saw in England; and I am certain that every penny of the capital so invested came back to him, in the superiority of the work done in consequence, every few years.

In France, the hospital system—for the school system was not formerly in favor—is carried out mainly by the workmen themselves. A society of the workmen is formed, of which the director of the works is president. Members chosen from among the workmen by ballot are associated with him as a council or board of trustees. A certain part of the funds necessary are subscribed by the company. The rest is raised among the workmen themselves, by means of a tax on wages or fines. These fines are established by ballot for such things as coming to the works intoxicated, arriving late, unnecessary neglect, and, in some cases, for profanity, etc. The workman declared sick by the physician in the employment of the company receives so much per day from the common fund. In case of death, a portion of the funeral expenses are paid by the society and the works together, and the widow receives a pension, graduated according to the position of her husband and length of time he has been connected with the society or the works. Persons disabled by sickness or age receive a pension, to provide for which a certain percentage of the wages received by every workman is retained by the society to create a pension fund.

Any workman discharged for incompetence or negleet, or who voluntarily leaves the works, loses all right to any part in the administration of this fund. In case he should return, except under special circumstances, he commences as if he had never been connected with the works.

I have been convinced for a great many years that the workman does the best where he is most kindly treated, and where he can look forward to some reasonable support for his family in case of his death or inability to work.

When I first returned to this country I hoped to put some of these schemes into practice, and I commenced with more enthusiasm than judgment to apply a system drawn from my experience in England and the Continent to Celts, with not very fortunate results. They were suspicious of the houses that I built, were certain that I was personally deriving benefit from the fines that I proposed for the foundation of their fund; were jealous of their own members, raised to higher position than themselves, as they thought; by being brought more in contact with the officers of the company than with themselves, and caused so much trouble that in the interest of the company I was obliged to abandon any attempts to elevate the condition of the men, and I must confess that I have been obliged as conscientiously to abstain from acting as I was at first disposed conscientiously to act. The short time that can be allowed to the discussion of any question like this by the Institute is greatly to be regretted, not only because anything that can be done to raise the condition of the workmen, necessarily increases the product, but also because there is a greater humanitarian interest in elevating the moral and physical welfare of

our own people and our adopted countrymen. Unfortunately our religious and political differences greatly aggravate the difficulty.

I believe it nevertheless to be true that some plan may be devised which will work successfully with the various nationalities which we are obliged to employ as workmen. The chief trouble with them all, as far as they have come under my notice, is that, as a class, the men engaged in mining are improvident and that they are addicted to the use of the stronger alcoholic stimulants. If they used good liquors in moderation there would be little objection. The difficulty, however, is that the liquor which they buy in preference is cheap, and that, as a general rule, even if they should try to purchase good liquor the cheap article would be furnished to them at a high price. This cheap liquor contains so much fusel oil as to endanger the constitution of the men and make them more unmanageable than they would be if inebriated simply by alcohol. To furnish the men with good liquor at a low price, or at least liquor which did not contain fusel oil, would strike me as being one of the means of remedying the real evil. I cannot pretend to say how this should be carried out or regulated in each particular case. The German would certainly be content with good beer, and if he understood that better beer was furnished to him for the same money he would take that in preference; and the Irishman would probably want something which scratched all the way down which could be furnished him without the poison. Whether it would be worth while for any company to undertake to inspect the liquor sold to their men is a question. Those who have large works have probably tried the experiment of regulating the sale and know more about it than I can suggest, but it is a matter of real moral and physical importance that some method should be devised by which workmen should be prevented, if possible, if they must drink, from drinking liquors which, from their method of manufacture, must be more or less poisonous. I cannot pretend to give a remedy for the improvident character of the miners, except it be to encourage marriage among them, and I do not feel certain that even this would be effectual; but it seems to me that some plan of furnishing them comfortable, commodious, well drained and ventilated houses, provided with plenty of good water, would be an efficient means of keeping them at home.

The question of education is provided for much better in this country under State laws than it is in any of the countries of Europe, and I do not know that it would be wise for any company to interfere further, perhaps, than to see that the State system was really carried out.

The matter of pensions, hospital relief, etc., has been taken up so much by societies among the workmen in this country that it would seem, perhaps, a difficult matter for any company to interfere in any way with it; I am satisfied, however, that if any plan could be devised by which the society could have as its officers members of the company, who would show in their meetings a real interest in the welfare of the men, that would go far toward destroying the influence of demagogue workmen upon their fellows. I am not prepared to furnish any plan for such a society, nor am I at all sure that such an organization would be possible. This class of people are difficult to treat with, and my experience of many years' charitable work among the poor has shown me that the great difficulty in reaching them is not so much the kind of treatment or the distribution of alms as their suspicion of you, for they are as a general rule slow to believe in disinterested motives. I make these suggestions with diffidence in presence of persons largely engaged in manufactures, and who have so many men working under them, on account of my great interest in the subject, because I have become convinced by long connection with charitable work that a great deal of our charity makes beggars and that there is a great deal of misdirection in the philanthropic work undertaken to elevate or relieve the classes known as the working classes. We cannot prevent their use of stimulants and I therefore think it is better that, since they cannot be prevented from drinking, a good and always a pure liquor should be furnished them, and that they should be furnished a better article than they can buy at the same price, which can only be done by those who have no interest in making money out of them. It is much easier, I know, to find fault than to carry out plans for relief, or even to suggest some practical method for effecting the object in which we are all so greatly interested.

Prof. BLAKE, stated that we, in the United States, were not without notable examples on a considerable scale of care of working men by employers and he cited the silk establishment of CHENEY BROTHERS at Manchester, Conn., and of the Messrs. FAIRBANKS in Vermont.

Crampton's Revolving Furnace.

WE have from time to time laid before our readers statements of the good results obtained by Mr. CRAMPTON with his revolving puddling furnace, combined with the use of powdered fuel. Prolonged experience has shown that all kinds of iron can be puddled by it, and that with the water-cooling apparatus adopted, all the mechanical difficulties anticipated have been entirely overcome, while after long-continued working, it is proved that the furnace itself withstands the excessive heat and costs but little for repairs.

In addition, however, to the mechanical details of the system, the method of heating by the use of powdered fuel is an important feature, as it has been shown that puddling, and all other operations requiring great heat, can be performed with it entirely without oxidation. Oxidation is not only prevented by the control possessed over the air and the carbon, but another source of oxidation, inherent in all other furnaces, is avoided, viz., that resulting from the decomposition of the water contained in the coal and air, the oxygen of which oxidises the iron. Mr. CRAMPTON employing extremely fine particles of carbon mixed with the flame, the oxygen of the water, in becoming decomposed, is converted into carbonic acid or carbonic oxide, leaving a neutral flame.

There is little doubt that puddled steel can be made in the Crampton furnace with great economy and regularity, and that the system offers advantages for the production of wrought iron direct from the ores. Many of the leading ironmasters in this country have themselves superintended the puddling in Mr. CRAMPTON's furnace of their own pig into wrought iron, and have watched with interest the working of the mechanical details, while foreign engineers have visited England to investigate the system, with the result of introducing it in their own establishments; furnaces are now being erected in France, Belgium and Austria, and arrangements are in course of completion for their construction in America, Russia, Sweden, Spain and Italy.

The Indian Government has recently requested Mr. CRAMPTON to test the iron and coal sent from India, and there is no doubt of their being adapted for mechanical puddling, judging from the good results obtained from the iron supplied by a private firm. It is an interesting fact which we have already pointed out, that hematite, as well as pig iron, in large quantities from Sweden, Derbyshire, Staffordshire, Northamptonshire, Cleveland, and also from the Low Moor Districts, have been treated in the furnace, and that all of them have produced wrought iron of superior qualities from which steel could be made, the iron produced from the best Swedish pig not being superior to that made from the common Cleveland pig in the Crampton furnace, while the cast steel made from the Cleveland metal has proved itself to be equal to high-class steel made from Swedish wrought iron. According to the latest results obtained from Cleveland pig treated in the Crampton furnace, an average of 99.207 per cent. of metallic iron was obtained, there being .517 per cent of carbon. From another series of analyses, the impurities remaining in the iron were:

Silicon	.186
Phosphorus	.196
Sulphur	.079
Total	.461 per cent.

These remarkable figures require no comment.

All these results, which go beyond the range of experiment, have been carried out in the daily working of the furnace, in charges of 7 cwt. to 10 cwt. each, solid blooms of 1 ton weight being occasionally made. The question of manipulating large, as well as small, pieces, has also been satisfactorily solved; blooms of 10 cwt. or 12 cwt, being cut up at the same heat into pieces weighing 1 cwt. each, besides which, homogeneous plates of 10 cwt., made from cast iron, containing $\frac{3}{8}$ per cent. of phosphorus, have been made for the Admiralty, and proved by them to be equal to the best English brands. Armor bolts and solid homogeneous masses for forgings are also being made for the Government.

The furnaces at the Carlton Iron Works, altered from the Danks to the Crampton system, although not complete in all their details, are working satisfactorily with inferior irons, and those nearly completed at Messrs. FOX, HEAD & Co.'s, comprising, as they do, all Mr. CRAMPTON'S improvements, will certainly give results at least as good.

At the works of Dr. STROUSBERG, near Prague, arrangements are now being made on a very comprehensive scale, and this, when completed in January next, will form one of the largest puddling establishments in Europe. The main building, which is already finished, is in one span 92 feet wide, about 200 feet long, and 24 feet high to the tie beams; it will contain sixteen revolving puddling furnaces, placed in two rows; these will produce 1,200 tons per week. They will be supplied with melted metal from four cupolas placed at one end, close to the main railway supplying the works with material, at which end also the coal will be ground. Six 8-ton hammers, and the re-heating furnaces will be placed at the other end of the building, and a narrow gauge railway system will be laid, to connect the cupolas with all the furnaces and steam hammers. Four 3-ton locomotives, to each of which is attached a crane, will convey the melted metal to the furnaces as well as the blooms to the hammers, so that the use of trolleys will be avoided, and the fettling, as well as the cinder from the furnaces, will also be moved with these little engines. No cranes are attached to the furnaces themselves, and there will be no cast iron floor plates employed, as all material will be carried on the fixed rails. The whole system is arranged to work one-ton charges, or even more if required, and two men will be able to manage each furnace without assistance, either for charging or discharging.

In the center of the building, above the tie beams, are placed the air and coal chambers for supplying the whole of the furnaces to which the ground coal is conveyed by screws from the grinding apparatus at one end of the building, the air being also conveyed by pipes to the central chamber from fans at the end. Coal feeders and air injectors, one for each furnace, are placed round these central reservoirs, with levers for each furnace, so that the attendants can regulate the air and fuel at will.

Arrangements are now being made for carrying out the plan proposed by Mr. CRAMPTON in 1873, for making cast steel in his revolving furnace. Experiments made some time since in a fixed bath, showed that the necessary temperature could be obtained by the use of the powdered fuel, and his puddling furnace, as it now stands, can be changed into a steel-melting furnace by lining it with sand.

Mr. CRAMPTON has quietly and perseveringly brought his system to its present stage of perfection, and now the doubts which at one period were expresed as to the probability of constructing a mechanical puddling machine adapted for use in ordinary iron works, and worked by unskilled men, have been removed.

It is quite certain that no system of mechanical puddling that requires careful watching and skilled management, can permanently succeed, however good experimental results may be. Mr. CRAMPTON has, we think, clearly shown that his system is free from these fatal defects.—*Engineering.*

On a Detector of Variation in the Pressure of Gas.

By M. DU MONCEL.

(Bulletin de la Société d'Encouragement, March, 1875, pp. 105-108.)

THE apparatus consists of an alarum, which is put in action by an electric battery at the instant the pressure of gas exceeds the desired amount. The liquid employed is a solution of protosulphate of mercury, maintained at the same level within two elements, each formed of two vessels placed one within the other, so as to produce a hydrostatic pressure. The larger is hermetically sealed, and the liquid is placed therein; the smaller is a tube of glass, open at either end, in which are placed a carbon and zinc plate; the former is immersed in the liquid, and the latter, with a knob at its extremity, is placed 0·04 to 0·08 inch above the liquid level; the smaller tube is hermetically fixed in the cover of the larger, in which are also two holes, through one of which passes a tube of caoutchouc in communication with the gas-meter, and through the other one stem of a syphon, connecting the larger vessels.

A slight increase of pressure of gas raises the level of the liquid, causing the immersion of the zinc and the charging of the battery; the current causes the alarum to sound, until the pressure of gas has been reduced to its normal condition. The same instrument is also used to discover escapes of gas, and the author refers to its value in regulating the consumption so as to produce a maximum effect with a minimum expense, an economy of 20 and 30 per cent. having been attained by it. It is added that the apparatus has been tried during four years with general satisfaction, and that the Société d'Emulation, of Rouen, have already rewarded the inventor, M. LAUNAY, whose long services as controller of the Paris Gas Company have given him a vast knowledge of the subject.

E. B.

Coal on Fire.—A quantity of anthracite nut coal on FAIRBANKS' wharf, next to MOREN's took fire through spontaneous combustion, on Tuesday afternoon. The fire was extinguished with considerable difficulty, without an alarm being given. Men were engaged all night in turning the coal over to keep it from heating.—Halifax (N. S.) *Chronicle.*

Coal Washing and Sorting Machine.

By MAX EVRARD.

(Bulletin de la Société d'Encouragement, Jan., 1875, p. 30.)

THE Author describes a machine for the simultaneous washing and sorting of coal, as it is taken from the mine mixed with other material. This is accomplished by tipping the charge from the mine into a large hopper provided with a grating which arrests the largest pieces of coal; the remainder passes into a deep cylinder of boiler plate, partly filled with water, through which the coal descends to a perforated piston with which the cylinder is fitted. In sinking through the water the coal becomes arranged in layers in the order of the sizes of the pieces, the largest lying at the bottom; stones and small pieces of rock, being of greater specific gravity than the coal, sink more quickly, pass through the perforated piston, and are collected in a receptacle for that purpose. The boiler-plate cylinder dips for about half its length into a second cylinder, also of plate iron, and of about twice its diameter, their connection being rigid and steam-tight. This latter cylinder contains water to near five-sixths of its height, from which the former cylinder, which is open at the end, receives its supply.

There is fitted into the upper surface of the large cylinder a steam pipe, which conveys steam, at a pressure of about 10 lb. per square inch, to the surface of the contained water, for the purpose of depressing the latter and thereby raising it in the smaller cylinder. The perforated piston which carries the load of coal is supported by a rod, fitted at its lower end with a small piston working in a hydraulic cylinder under pressure; this cylinder occupies the lower central portion of the smaller plate-iron cylinder, and is fixed to bearers fastened to the larger cylinder. The upper portion, a length of about 3 feet, of the cylinder which carries the charge of coal, is made separate from, and capable of moving over, the lower portion, upon horizontal guides fixed to the building in which the machine is contained, and along these guides it is pulled backwards and forwards by small pistons working in hydraulic cylinders.

The operation of the machine is as follows: Steam is first turned into the large cylinder, and the water therein depressed and forced upwards in the smaller cylinder to near the height of the joint between its lower fixed and its upper movable portion. While the water is maintained at this height, the charge of coal is tipped into it from a small wagon. It descends on to the perforated piston, which is at its lowest position, the stones and larger pieces of coal reaching it first, and the charge thus becoming partly sorted. Steam is now turned off, and that left in the cylinder is condensed, forming a partial vacuum, which causes the water to pass from the smaller cylinder through the coal and refill the large cylinder. Intermittent ascending and descending currents are thus directed through the charge of coal, by turning the steam on or off as many times as may be necessary to clean and classify it. After the steam is turned off for the last time, the mass is allowed to stand for a period of from two to five minutes. By means of the hydraulic pressure cylinder, the entire mass is then raised sufficiently to allow of the upper layer of fine material and dirt to be directed into a trough, by the horizontal movement of the upper portion of the cylinder. After the first operation, the movable portion of the cylinder is returned, and the charge raised sufficiently to admit of the removal of another layer, or of the whole by the return motion of the cylinder. The trough through which the coal passes into small wagons is fitted with a grating to allow the water to drain from the coal into a receiver, by which it is conducted into a large settling tank, where it is cleared of mud and stones, and afterwards again used in the cleaning cylinder. Suitable tanks are provided by which the proper supply of water is continually passed into the washing cylinder. The quantity of steam used per day in cleaning about 200 tons of coal, including power used in supplying water under pressure for raising the washed coal, is about equivalent to 4 HP.; but as the process incurs no waste or loss, and as the coal is sorted, and a much larger proportion of it made available for the manufacture of coke, the inventor considers that the process may be carried on with a profit of £8 per day from each set of such apparatus. W. W. B.

Prizes for Metallurgical Improvements.

THE Société d'Encouragement pour l'Industrie Nationale (offices at Paris, rue de Rennes, 44), offers a prize of £120, to be competed for in 1876, for a process of manufacture of cast-steel rails from common ores, containing from 0.50 to 1.50 per cent. of phosphoric acid. In 1876 will likewise be accorded the D'Argenteuil prize of £480 for the discovery or improvement of the greatest consequence to French industry; and in 1879 the society's own prize, of the same amount, for the same object. Other prizes are: 1. £120 (in 1876) for a steam-engine of from 25 to 100 horse-power, burning 700 grammes of coal per horse-power per hour, weighing less than 300 kilos., and costing under £16 per horse-power. 2 £40 (in 1878) for a small motor for domestic purposes. 3. £80 (in 1878) for specified improvements in flax and hemp spinning. 4. £80 (in 1879) for cotton carding. 5. £80 (in 1880) for a file-cutting machine. 6 £80 (in 1877) for a method of obviating the shock and vibration of heavy machinery, such as steam-hammers. 7. £40 (in 1876) for any useful application of the recently discovered metals—calcium, magnesium, strontium, thallium, etc. 8. £40 (in 1876) for a new alloy useful in the arts. 9. £80 (in 1877) for artificial graphite for drawing pencils. 10. £120 (in 1877) for the artificial preparation of compact black diamond, for obtaining a powerful means of action in working iron, steel, and precious stones. 11. £240 (in 1878) for a theory of steel based upon experiment, and having for object to better regulate the manufacture of steel. 12. £40 (in 1876) for the establishment in France of a workshop for the complete treatment of the ores of nickel, and the preparation of the pure metal; the nickel ores from the Alps, the Pyrenees and Algeria being at present only treated for smalt, and then sent away, to Germany more especially, for the extraction of the nickel. 13. £40 (in 1880) for means for the economical production of high temperatures. 14. £80 (in 1878) for a means of hindering soot from adhering to the walls of chimneys, so that they may be fully cleansed.—*Iron.*

On a Smoke-Condenser for Underground Steam-Boilers at the Queen Louisa Coal Mine, near Zabrze, in Upper Silesia.

By H. SCHANTZ.

(Zeitschrift für das Berg, Hütten und Salinenwesen, xxii., part 3 and 4, pp 168–170.)

AT this mine there are two pairs of Cornish boilers, each 21·5 feet long and 5 feet in diameter, placed in boiler-rooms off the main drawing level, about 126 yards below the surface, for the purpose of driving a 44-inch Tangye pumping engine, and a double-cylinder horizontal engine for drawing coals from the dip workings. The smoke from these boilers was at first conveyed to an upcast shaft through a drift only partially protected by a lining of masonry, until the deposit of finely-divided soot, often in a state of ignition, was so constant as to give rise to a fear of the ignition of the coal. It was therefore decided to adopt a means of cooling the smoke before admitting it into the flue drift. The condenser consists of an upright cylinder of boiler plate, about 14 feet high and of 5 feet internal diameter, with twelve horizontal diaphragms placed at equal distances apart. Each of these diaphragms is made of a double thickness of sheet iron, perforated with a great number of round holes 0·2 inch in diameter. They are of the same size as the internal diameter of the tube, but from each a segment about 1 foot in breadth is cut off, the cut edge being placed alternately opposite to those of the adjoining plates above and below, so as to form a serpentine passage for the smoke, which is admitted at the bottom through two circular orifices of about 2 feet in diameter, one for each pair of boilers. Water from the top falls through the plate in a fine shower, and is discharged through an 8-inch pipe at the bottom. The upward current of smoke is maintained by a Schiele's exhauster of 13-inches diameter, the distance travelled, owing to the obstructions caused by the diaphragms, being about 52 feet. The aperture for the discharge of the cooled smoke is about 12 inches in diameter. The supply of water for the condenser is taken directly from the discharge main of the pumping engine, and afterwards flows off by the adit. The apparatus works well, no soot now being deposited in the flue drift; but the resistance to the current is greater than was estimated, and the exhauster and its 5-HP. engine, not being sufficiently powerful to maintain the flow at a proper speed, are to be replaced by another of 15-HP. The exhaust steam from all the engines is discharged into the smoke drift, and contributes something towards increasing the draught. The experiments, up to the present time, show that the efficiency of this class of condenser is dependent chiefly on the power of the exhauster, on the distance traversed by the smoke, and the perfect division of the water, and not to any great extent on the quantity of water employed. H. B.

Products of the Destructive Distillation of Coal.

To burn a piece of coal seems, doubtless, a very simple matter to most of our readers; they probably do not consider that it results in the formation of the following 51 elements or chemical compounds—to say nothing of the indefinite number not determined, and of which we know little.

To calculate the theoretical heating power of a given coal, we should know how much of each of these substances is formed from it, and to know what their heating powers are, neither of which has been ascertained with even an approximation to accuracy. Dr. HOFMANN, of the University of Berlin, furnishes, in *Percy's Metallurgy*, the following list of the compounds generated by the destructive distillation of coal.

New Atomic Weights.

Hydrogen	H	Benzol	C_6H_6
Water	H_2O	Toluol	C_7H_8
Carbonic oxide	CO	Xylol	C_8H_{10}
Carbonic acid	CO_2	Cumol	C_9H_{12}
Sulphurous acid	SO_2	Cymol	$C_{10}H_{14}$
Hydro-sulphuric acid, (Sulphuretted hydrogen)	H_2S	Naphthalin	$C_{10}H_8$
Bisulphide of carbon	CS_2	Anthracene	$C_{14}H_{10}$
Hydrocyanic acid	HCN	Phenanthrene	$C_{14}H_{10}$
Hydrosulphocyanic acid	HCNS	Fluorene	$C_{13}H_{10}$
Acetic acid	$C_2H_4O_2$	Pyrene	$C_{16}H_{10}$
Carbolic acid, (Phenol)	C_6H_6O	Crysene	$C_{18}H_{12}$
Cresylic acid, (Cresol)	C_7H_8O	BASIC NITROGEN COMPOUNDS.	
Phlorylic acid, (Phlorol)	$C_8H_{10}O$	Ammonia	H_3N
Rosolic acid	$C_{20}H_{16}O_3$(?)	Aniline	C_6H_7N
HYDRO-CARBONS.		Pyrodine	C_5H_5N
Methane, (Marsh-gas)	CH_4	Picoline	C_6H_7N
Sextane, (Propyl)	C_6H_{14}	Lutidine	C_7H_9N
Octane, (Butyl)	C_8H_{18}	Collidine	$C_8H_{11}N$
Decane, (Amyl)	$C_{10}H_{22}$	Parvoline	$C_9H_{13}N$
Duodecane, (Caproyl)	$C_{12}H_{26}$	Corindine	$C_{10}H_{15}N$
Paraffin	C_nH_{2n+2}(?)	Rubidine	$C_{11}H_{17}N$
Ethene, (Olefiant-gas)	C_2H_4	Viridine	$C_{12}H_9N$
Tertene, (Propylene)	C_3H_6	Chinoline, Leucoline	C_9H_7N
Sextene, (Caproylene)	C_6H_{12}	Lepidine	$C_{10}H_9N$
Septene, (Enanthylene)	C_7H_{14}	Cryptidine	$C_{11}H_{11}N$
Ethine, (Acetylene)	C_2H_2	Pyrrol	C_4H_5N

CORRESPONDENCE.

The Lowe Gas.

MONTCLAIR, N. J., Sept. 15, 1875.

TO THE EDITOR: Sir—I take pleasure in informing you that an increasing experience with the Lowe Gas process at Utica, proves it to be entirely controllable, and thoroughly reliable for the production of a superior illuminant, at a lower price than any method heretofore known.

It has been often urged against other hydro-carbon processes that the product was not uniform, but our photometric tests show a variation from day to day within the range of a single candle power.

A series of continuous experiments have developed facts of great interest. For instance, since the date of your first article (August 7) it was decided to pass the gas through the lime boxes, (not heretofore the practice,) not for the usual purpose of extracting carbonic acid, of which there was none, or sulphur, which existed in very inconsiderable proportion, but to ascertain its effects upon certain impalpable ingredients, supposed to escape through decomposition in the generator. The effect was a surprising success, as must be conceded, when it is stated that the flame was so intensified that the proportion of oil was, as a consequence, reduced from 4½ gallons to 3 gallons per thousand cubic feet, a quality of 21 candles being still maintained! This improvement of course paid for the lime, and made a further saving in cost.

Although the question of fixedness has been abundantly demonstrated during two winters' distribution at Phœnixville, and one at Columbia, yet it was deemed best to apply crucial tests at Utica.

Accordingly the pipe connected with the photometer was packed with ice and salt, but after several hours' exposure the gas showed no diminution of power. This was a more severe trial than practice could ever develop, but it was determined to make one yet more extreme by which the gas to be experimented upon should be detached from any pressure or influence of warmer gas.

Therefore a small holder, with a capacity of, say, ten cubic feet, was charged

and thoroughly surrounded with ice and salt and left for eight hours, when it was found frozen fast to the water at its base. The jet was then lighted and indicated at once a power of twelve candles, which in five minutes rose to fourteen, and after a similar interval to seventeen, and at the end of a quarter of an hour recovered its maximum of twenty candles. Nor were any evidences of deposit discernable.

Doubtless, increasing familiarity with the process will give us greater facility in its management, but having left untried no known tests, we cordially invite critical investigation on the ground, and the practical suggestion of any parties interested in improved methods for the manufacture of illuminating gas.

Yours, very respectfully, GEO. S. DWIGHT.

MONTCLAIR, N. J., Sept. 21, 1875.

TO THE EDITOR: Sir—The last issue of the *Gaslight Journal* contains an article from Mr. H. P. ALLEN, commending attention to a water-gas process in operation at Poughkeepsie, under the Gwynn-Harris patents, which he represents.

We are disposed to congratulate him cordially, or any parties who help to demonstrate the value of new methods over old, and wish him and them success. But when he intimates that the Lowe process is an infringement of the other, I am compelled to say, on behalf of its managers, that having no desire to invade the rights of others, they have not only investigated the subject carefully themselves, but have called to their aid some of the ablest counsel in this country, by whom they are fully sustained in the opinion that their rights are entirely independent. They are, therefore, indisposed to change that belief on any less authority than a decision of the Supreme Court.

Truly yours, GEO. S. DWIGHT.

Selected List of Patents for the Week ending Sept. 11, 1875.

RELATING TO MINING, METALLURGY, GAS MAKING, ENGINEERING, ETC.

Reported for the "ENGINEERING AND MINING JOURNAL" by LOUIS BAGGER & Co., Counsellors at Patent Law, Washington, D. C.

No. 167,212. *Air and Gas or Fluid Regulator* BENJAMIN BALES, Baltimore, Md.

This consists of an adjustable screw stem, valve, and spiral spring, in combination, whereby said valve is raised and lowered to regulate the flow from the inlet to the outlet, and preserve a uniform pressure.

No. 167,353. *Earth Augers*, D. L. NEWCOMB, Kenton, Ohio.

This is an auger bucket provided with a side piece or wing, with a flange extending the entire length of the bucket, which acts as a reamer.

No. 167,324. *Rock Drilling Machine*, CAMILLE FERROUX, Goeschenen, Switzerland.

A stationary cylinder is furnished with a hollow rod and piston, which carries the working cylinder. Compressed air, admitted back of the hollow piston, feeds up the drill-cylinder, to which air is conducted through the hollow piston-rod. A pawl on the cylinder engages in a rock, and holds the cylinder stationary until the anvil advances sufficiently to raise the pawl.

No. 167,291. *Furnaces*, BENJAMIN T. BABBIT, New York City.

Air to the fire-box is heated in its passage through chambers inclosing the fire tubes.

No. 167,210. *Furnace Doors*, E. H. ASHCROFT, Boston, Mass.

An inside swinging flap allows the fuel to fall upon the grate from a hopper. Air is admitted to the surface of the fuel through an aperture at the bottom of the door and deflected downward by a shield on the inside of the furnace wall.

No. 167,230. *Furnace Grate Bars*, E. M. ERDMAN, Lykens, Pa.

This invention consists of a series of parallel bars and scalloped knife-edge bars forming together inverted arches, whereby a greater support is given to the bar at each section, in combination with supports having air openings, said supports being at right angles with the series of bars.

No. 167,163. *Apparatus for Preparing Oil Well Gas for Heating Furnaces*, WM. S. GILLEN, Pittsburgh, Pa.

This is a trap, having oil-and-water-pipe-coil partially immersed in water, and having perforations in the immersed bottom of the coil for the escape of water.

No. 167,241. *Tilting and Revolving Puddling Furnaces*, GORDON W. HALL, Havana, N. Y.

The top of a stationary hollow shaft is rounded, forming a pivot, on which the centrally recessed hearth revolves, and can be tilted at an angle, while air is constantly supplied to its bottom and sides. Two rings or bands, fitting closely over each other below the hearth, are concentric therewith, the inner one being attached thereto by standards, while the outer is attached by lugs to the revolving spur wheel below. By suitable keys these rings may be locked so that the whole system revolves. They are tilted by a crank and worm-screw, acting on the outer band, so as to give the revolving hearth any desired angle. When inclined and unlocked, and the revolution of the hearth stopped by a swivel-hook passing through the furnace wall, an undulating motion is given.

No. 167,191. *Ore Sizing Machines*, DAVID NEVIN, Georgetown, Col.

The ore fed through the hopper passes upon the first sieve, from which the coarser particles pass off through the outer frame, while the inner are sifted through to the sieve below, and pass out on the other side of the outer frame. This separation of the ore can be repeated by multiplying the number of sieves. The whole inner frame carrying the sieves, is operated by the crank and shaft outside the outer supporting frame. The meshes may be made smaller and smaller in the several sieves.

Notes.

The largest Gold Nugget yet found in Nova Scotia.—A nugget of gold was lately extracted by some prospectors from a lead on the extreme western limits of the Oldham districts, which is variously estimated at from $1000 to $2000 in value. This is the largest find that has yet been made in Nova Scotia.

On the 16th inst., Mendez Cohen, Esq., resigned the Presidency of the Pittsburgh and Connellsville Railroad Company, and JOHN KING, ESQ., 1st Vice-President of the Baltimore and Ohio Railroad Company, was elected to fill the vacancy. It is said there will be no change in the other officers of the road.

Richlé Brothers, Philadelphia, have completed and are removing to their new Scale Works, 9th street, above Master. They will have one of the largest and most complete works in the country, with new machinery designed and built at their own works, and will have about double their present capacity.

The Bolthoff Pulverizer.—The Central City *Register* says: During the past year we have had frequent occasion to make mention of the newly-invented Bolthoff Ball Pulverizer and Amalgamator, manufactured at the Eureka Machine Works in this city. Various testimonials to its value have been received; witness the following:

BATESVILLE, C. T. September 9, 1875.

MESSRS. HENDRIE BROS & BOLTHOFF: We wish to recommend to the metallurgists of Colorado the new Ball Pulverizer, manufactured by HENDRIE BROS. & BOLTHOFF, of Central City. We have been using one of these mills for two months, during which time it has never failed to give entire satisfaction. We regard it as the best and cheapest apparatus for pulverizing now in use. The capacity of the mill which we are using, is sixteen tons in twenty-four hours. It never fails to treat this amount, and its maximum capacity is greater. A. C. BATES.

The "Anthracite Record" is a new weekly paper, published at Hazleton Pa., J. C. FINCHER and B. F. H. LYNN, Editors. It deserves especial mention, for it gives more information of use to coal operators, miners, and all interested in the region in which it is published, than any of the local papers of the coal regions that we have yet seen. It is an organ of the working classes, and, as such, takes their part as against capitalists and combinations, is edited with more than ordinary ability, and is moderate and conciliatory in its expression of opinion We trust it will maintain this character, even in the excitement of a political campaign or of a strike, and that it will seek to serve the true interests of its protegés by the dissemination of correct information, and the advocacy of the principle of conciliation and arbitration for the settlement of those difficulties which will inevitably occur from time to time between labor and capital. The names of its editors indicate that it will exert a great influence in the coal regions, and we trust that this influence will be exerted in favor of conciliation.

Laurium Silver Mines.—A letter just received from Greece relates a curious fact. The original Laurium Company, which almost provoked an international conflict, while working the surface at Laurium, purchased the subsoil corresponding to that surface. This subsoil, which was not explored, or, at least, not avowedly so, remained unworked and unknown. The company having sold only the surface to their successors, a little while ago an engineer was directed by the old company to examine this subsoil. He set himself to search for all the wells now filled up which had served in ancient times for the working of the mines, and discovered a certain number. He examined some of them, and what was his surprise to find in the center of the tract, in one of the mines which seemed abandoned for ages, the miners' tools leaning against the walls, small heaps of minerals ranged behind each tool; the mine, in short, in the very state the Greeks—suprised, doubtless, by some unexpected attack - had left it. The mine or mines were not abandoned, therefore, on account of their being exhausted; excavations were made, and immense horizontal layers of silver, lead and calamine were found, all of incalculable richness.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Sept. 18:

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co	54,689	2,236,126	56,179	1,6 7,466
D. L. and W. RR. Co	54,367	2,457,683	54,311	1,733,595
Penn. Coal Co	27,884	964,016	29,366	938,387
L. V. RR. Co	22,118	657,625	16,151	690,366
P. and N. Y. RR. Co	982	77,380	1,561	43,948
C. RR. of N. J	42,773	829,070	34,143	980,626
Penn. Canal	14,893	176,809	8,776	237,376
Lack. and B. RR.	..	81,493	..	112 529
	217,705	7,4%,119	200,637	6,414,293
Lehigh Region.				
L. V. RR. Co	94,143	1,101,036	70 388	2,273,315
C. RR. of N. J.	31,311	352,970	30,939	783 434
D. H. and W. B. RR.	1,826	55,276	1,465	29,564
	127,280	1,509,232	102,792	3,086,283
Schuylkill Region.				
P. and R. R. RR. Co	172,031	2,739,927	92,447	3,400,697
Shamokin & Lykens Val.	26,304	863,166	25,986	654,631
	198,335	3,603,093	118,433	4,055,328
Sullivan Region.				
Sul. and Erie RR. Co	..	5,357	428	26,978
Total	543,320	12,598,081	422,340	13,582,882
Increase	120,980	..	..	..
Decrease	..	984,801	..	..

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent, of the whole production.

Bituminous Coal Production to Sept. 1st, 1875.

The following does not include the total production, but such quantities as have been reported to this office:

Pennsylvania	6,203,730
Ohio	451,735
Maryland	1 661,602
Illinois	529,881
Indiana	28,069
Iowa	96,980
Wyoming	121,460
West Virginia	12,209
Tennessee	67,259
Alabama	39,019
Colorado	12,504
Kansas	72,000
	9,296,468

The following Table does not give the entire production of our Bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Sept. 18, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2,240 lb	55,152	1,648,384
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	7,805	226,982
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	3,077	152,344
*East Broad Top	894	32,589
Clearfield Region, Pa.		
*Snow Shoe	1,058	46,534
*Tyrone and Clearfield	18,608	598,369
Allegheny Region, Pa.		
*Pennsylvania RR	3,578	159,981
Pittsburgh Region, Pa.		
*West Penn. RR	4,653	152,176
*Southwest Penn. RR	1,732	12,243
*Penn. & Westmoreland gas coal, Pa. RR.	17,836	475,697
*Pennsylvania RR	10,902	293,778
Kanawha Region, W. Va.		
†Chesapeake and Ohio RR	4,184	116,029

* To Sept. 14. † Sept. 11.

The Production of Coke for the week ending Sept. 6.

Tons of 2000 lb	Week. Tons.	Year. Tons.
Tyrone and Clearfield	..	273
Alleghany Region	..	53
West Penn. RR	923	36,269
Southwest Penn. RR	11,415	376,210
Penn. & Westmoreland Region, Penn. RR.	694	22,904
Pittsburgh, Penn. RR	2,220	73,986
Total	15,282	509,695

The receipts at Port Richmond for the week were 75,000 tons, shipments 65,000 tons, and balance on hand 145,000 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 59,563 tons.

The Exports of Coal from Baltimore for the week were 000 tons, and for the year, 28,800 tons as compared with 61,787 tons to the corresponding time in 1874.

Receipts of coal at Boston, for week ending Sept. 17, and years from September 1st, 1874 and 1875.

From	Week. Tons.	Previously Tons.	1874. Tons.
Alexandria and Georgetown	5,123	3,786	18,890
Philadelphia	10,245	49,792	37,139
Baltimore	5,457	4,058	18,516
Other places	3,415	21,466	20,954
Great Britain	—	604	615
Nova Scotia	1,013	1,213	5 625

Shipments from Pictou, N. S., for the week ending Sept. 17:

	Tons. Week.	Year.
To United States	580	16,139
" West Indies	—	1,107
" South America	—	1,002
" Canada	7,173	108,012
" Other Provinces	3,095	39,198
	10,848	165,458

Belvidere Delaware RR. report:	Week.	Year 1875.	Year 1874.
The receipts of coal at Coal Port (Tr'ton)	9 119	90,619	202,267
" " " South Amboy....	13,083	148,858	459,517
Shipments of Coal Port (Trenton).....	10,348	88,695	202,733
" South Amboy.....	12,014	201,185	455,209

Shipments from the Block House, Cow Bay, C. B., to the following destinations, from Aug. 31 to Sept. 6, 1875:

	Week.	Year.
Provinces	541	5,475
West Indies	—	806
United States	1,394	7,525
	1,935	13,806

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Sept. 24, 1875.

Anthracite.

The cool weather of the past week and the knowledge that higher prices will prevail next month have very materially increased the demand for domestic sizes of coal. Lehigh coal is in very good demand for all sizes excepting lump and steamer, although stove and egg sizes are receiving the greatest attention. As the larger sizes of coal are being broken into domestic sizes it is quite probable that we shall soon see the existing demand well supplied. The Lehigh and Wilkes-Barre Coal Company are fully occupied filling contracts made early in the season; but with this exception the companies have large stocks which are not diminishing, but rather increasing. The representatives of the Combination met in this city on Tuesday, and established prices for October. There have been several complaints against certain of the members, but it is reported that the last meeting adjourned in the greatest harmony. Some of our contemporaries have been predicting an abandonment of the organization, but there is no probability whatever of such an event. Although the action of certain of the companies may not fully meet the wishes of others, yet with interests so identical, there will be little difficulty in arranging these minor details. It is understood that the programme, as fixed at the opening of the season, will be carried out, although there will probably be some revision for next year's programme.

A matter now receiving very serious consideration is the extent to which bituminous coal is likely to enter into competition in the future; the loss of trade to the anthracite companies this year having been a very serious one. To regulate prices so as to prevent this competition will be a difficult matter, as it is hardly probable that the whole list will be reduced to conform with the prices of manufacturing sizes. At the present time, Cumberland is, in a few cases, sold at figures equal to $5 50 delivered at Boston, while anthracite chestnut coal costs from $6 05@$6 55 delivered at the same point, and under certain conditions, Cumberland coal is much superior as a steam generator. These figures indicate that a considerable reduction will have to be made by the anthracite companies; besides, there are indications that the Cumberland companies will introduce certain economies during the winter, which will enable them to become still stronger competitors. What the Clearfield companies may be able to do depends upon the action of the Pennsylvania Railroad Company, but it is very probable that company will make a great effort to retain the business already secured, and will endeavor to increase it.

OCTOBER PRICES.—The Delaware and Hudson Canal Company, the Lehigh and Wilkes-Barre Coal Company, and the Delaware, Lackawanna, and Western Railroad Company, have adopted for October the following prices, which show advances of 10c. per ton on stove and egg sizes:

Lump	$5 05	Egg	$5 65
Steamer	5 15	Stove	6 10
Grate	5 25	Chestnut	4 95

The Lehigh Coal Exchange prices for next month show advances of 5c. per ton on broken, 5c. on egg, and 10c. on stove; and are as follows:

Lump	$5 55	Stove	$6 10
Broken	5 55	Chestnut	5 10
Egg	5 65		

The Pennsylvania Coal Company advanced prices 10c. per ton on egg and stove sizes to their contractors. A. S. SWORDS, Esq., quotes Pittston coal at Newburgh, for the remainder of this month, as follows:

Lump	$5 00	Egg	$5 30
Steamer	5 00	Stove	5 80
Grate	5 10	Chestnut	4 85

and for delivery during October, as follows:

Lump	$5 00	Egg	$5 40
Steamer	5 00	Stove	5 90
Grate	5 15	Chestnut	4 85

The Philadelphia and Reading Coal and Iron Company's prices for October delivery show advances of 10c. per ton on egg and stove sizes, all around, and 10c. per ton on Lorberry and Lykens Valley broken; they are as follows—f.o.b., Philadelphia:

	Lump.	Steamer.	Broken.
Hard White Ash Coal	$4 55	$4 65	$4 75
Free Burning White Ash Coal	4 55	4 65	4 75
Schuylkill Red Ash	—	—	5 05
Shamokin	—	—	—
Lorberry	—	—	5 90
Lykens Valley	—	—	6 50
	Egg.	**Stove.**	**Chestnut.**
Hard White Ash Coal	$5 15	$5 60	$4 45
Free Burning White Ash Coal	5 15	5 60	4 45
Schuylkill Red Ash Coal	5 25	5 65	4 45
Shamokin	5 40	5 80	4 50
Lorberry	5 90	5 90	4 65
Lykens Valley	6 50	6 50	5 50

The Combination has ruled that the Delaware and Hudson Canal Company, and the Delaware, Lackawanna and Western Railroad Company shall not ship coal to tidewater during the first two weeks of October. As these companies have more than enough coal in stock at tidewater to meet their requirements during that period, we fail to see wherein the other companies are to derive any benefit from this action.

The production of anthracite coal for the week ending September 18th was 543,320 tons, and from January 1st, 11,492,573 tons. The production for the corresponding week of 1874 was 422,340 tons, and from January 1st., 1874, 13,582,882 tons. The production for the week ending September 11th, 1875, was 562,659 tons. From the above figures it will be seen that there was a decrease in the production last week, from the week previous, of 19,339 tons, and an increase of 120,980 tons over the week ending September 29, 1874. There has been a decrease since January 1st, as compared with the corresponding period of 1874, of 984,801 tons. Very reliable authorities inform us that the Eastern markets cannot take the same amount of coal from now to the 1st of January, as they did during the same period last year; and as two of the companies are to work under a restricted production next month, it is very probable that the difference between this and last year's production will again increase.

Bituminous.

The cool weather of the past week has been a reminder of the approaching winter, when higher freights may be expected and greater difficulty be experienced in handling coal, so that an improvement is noticeable in the demand for the several bituminous coals. The Cumberland companies are discussing ways to enable them to place their coal at the seaboard at a less cost. It looks as though an effort would be made to reduce wages during the winter, and another very strong one to secure lower rates of transportation, both of which will probably meet with success. A very large business continues to be done from the Central Pennsylvania district, although some companies are restricted in their shipments by a lack of cars. The Cumberland output last week was about 4,000 tons behind the previous week, and about 1,000 tons behind the corresponding week of 1874.

The output of the Clearfield district, from January 1 to September 14, was 598,369 tons as compared with 433,814 tons for the corresponding period of 1874, or an increase, this year, of about 36 per cent.

Foreign and Gas Coals.—There are no further arrivals of foreign coals excepting a few cargoes constantly arriving from Nova Scotia for gas purposes. Small sales of domestic gas coals occasionally take place, while there is considerable activity in the deliveries on contracts made at the opening of the season. On the 10th inst., the Commissioners of Charities and Corrections advertised for bids for "One cargo gas coal, about 200 tons, to be of pure Westmoreland Co's. coal, and warranted to produce not less than 5¼ feet of gas to the pound, subject to inspection and analysis, each ton to consist of 2,240 pounds, to be delivered at Blackwell's Island. The advertisement further stated that no proposal would be considered unless accompanied by the names, etc., of two sureties for the faithful performance of the contract, which necessitated going through considerable "red tape." According to the accepted basis of testing these coals, the advertisement called for what it was impossible to deliver, as there are no coals in Westmoreland County that give an average yield of 5½ feet to the pound, and further, the advertisement called for Westmoreland Co.'s coal, which, however, upon application, was explained to mean Westmoreland County coal. Such being the case, those who could have furnished the coal were deterred from entering bids, and the result was, that there was but one bid, and that an informal one, to furnish the Department a cargo of best quality gas coal, at $6 50, or at the regular market price. There being, apparently, no others desirous of furnishing the Department with coal, this bid was held for consideration. Though this is a very trifling matter, we record it as showing the manner in which such contracts are made. The amount was too small to bring out any of the tricks to which we have heretofore had occasion to refer.

FREIGHTS.

At Georgetown and Baltimore rates continue on the basis of $1 65 to Boston, while from Philadelphia the majority of charters during the week have been made at $1 50, although in some cases $1 60 was paid. From this port $1 30@$1 35 has been the ruling rate. There is an inclination, at each of these ports, to advance rates for points around the Cape, and for the balance of the year freights will, probably, rule higher, as the season is approaching when captains are not anxious to make these trips without being fairly compensated. The indications are, however, that to other points freights will rule low for the next sixty days.

South American and West India Markets.

Extracts from letters by latest mails.

St. Thomas, Sept. 11, 1875—"Coal—We sold a part cargo of 84 tons, ex-brig *Hannah D.*, from Barbados, and cargo of 305 tons, per brigantine *James Coffill*, from Glace Bay, was sold by other parties, both at $5."

Bahia, Aug. 28, 1875.—"Coals—Our market during the past month has been supplied with about 5,110 tons, principally to steamer agencies. Sold a cargo of best Stanly the other day at 18$000, cash in 60 days."

Pernambuco, Sept. 1, 1875.—"Coal—There has been little doing of late in this article, arrivals having been for account of various companies. We quote 15$000 per ton for Lancashire, 18$000 for Cardiff."

Rio de Janeiro, August 25th, 1875: "Coal.—During the past month our coal market has been in a very favorable position, supplies having been moderate; to-day, however, on account of the arrival of some 10 or 12 vessels with cargoes of coal, the market is not quite so firm. I quote:

Newcastle	19$@20$500 per ton.
Cardiff	23$000 "
Scotch	16$@17$000 " "

Philadelphia Coal Trade.

PHILADELPHIA, Sept 23, 1875.

Dealers are busily engaged in putting coal in, carts are seen in every direction in the streets, and still, to the astonishment of the Schuylkill County operators, the trade drags and new orders are not at all plenty. A good time coming is predicted but is sure not to come. Schuylkill has tried to make people buy by force and it is not a success. Other regions have taken hold of the market. Chestnut has accumulated and become a drag, the manufacturers who used it formerly having been driven to pea coal or other fuels by the high prices. The leading, by putting down the price of chestnut to carters below the cost to the dealers, and with a stock on hand which will last a long time at the rate it is now disposed of, has not succeeded in drawing a large trade by it, but has succeeded admirably in impressing the buyers with the idea that a decline in prices was close at hand, a very foolish and dangerous thing to do at this time of the year. The system of contracts which has been given up has also told severely on the consumption of anthracite.

Vessels are not plenty, but the supply has been better than it was a week ago. Rates for vessels carrying over 350 tons have dropped to $1.50 to Boston, the smaller vessels getting $1.60. To the Southern ports rates are stiffer: Richmond, $1; Washington, 90 to 95 cents; Norfolk, 85 to 90 cents.

Wholesale Prices of Anthracite Coal for Oct. f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 05	5 15	5 25	5 65	6 10	4 95
‡Pittston at Newburgh	5 05	5 05	5 15	5 40	5 90	4 85
Wilkesbarre at Port Johnston	5 05	5 15	5 25	5 65	6 10	4 95
Plymouth, R. A., *Net*	....	....	5 25	5 65	6 10	4 95
Susque. Coal Co. at Amboy W.A.	5 05	5 15	5 25	5 65	6 10	4 95
Kingston at Hoboken	5 05	5 15	5 25	5 65	6 10	4 95
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 55	5 65	6 10	5 10
Old Company's Room Run "	5 55	....	5 55	5 65	6 10	5 10
§Sugar Loaf, Hobok. &Amb."	5 55	....	5 55	5 65	6 10	5 10
Lehigh Coal Exchange "	5 55	....	5 55	5 65	6 10	5 10
Honey Brook Lehigh	5 55	....	5 55	5 65	6 10	5 10
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	5 55	....	5 55	5 65	6 10	5 10
†Schuylkill Coals at Port Richmond.						
Schuylkill white ash	4 55	4 65	4 75	5 15	5 60	4 45
Schuylkill red ash	....	....	5 05	5 25	5 65	4 45
Shamokin white and red ash	....	....	....	5 40	5 80	4 50
Lorberry	....	....	5 90	5 90	5 90	4 65
Lykens Valley	....	....	6 50	6 50	6 50	5 50

Per ton.

Freight from Hoboken and Weehawken to New York.... 40c.
" " Elizabethport & Port Johnston to N. York. 45c.
" " South Amboy to New York ..... 50c.

*Freight on Lackawanna coal from Rondout to New York, by boats or barges of the D. and H. Canal Co. 50c. per ton, the expense of towing vessels from New York harbor to Rondout and back will be borne by the Company.

†Freight from Port Richmond to New York (free of discharging) 85c. per ton.

‡Prices to the Trade.

§By Canal at New York, Jersey City and Brooklyn, 30c additional alongside.

Schuylkill coal is delivered f. o. b. of boats in New York harbor at 50c. per ton additional to these rates.

Pittston coal is delivered to carts in New York or Brooklyn at 65 cents per ton in addition to the above rates.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$5 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" South Amboy	8 50	....
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt	5 00	6 50
Despard, West Va.,	——	6 50
Murphy Run, West Va., at Baltimore	4 75	6 50
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy,
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/ 18	00@20 00
" Gas Cannel "	30/	12 00
Scotch Gas Cannel, at Glasgow, nominal,	28/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	5 25@5 50
Cumberland, at Baltimore	4 15@4 50	5 75@6 00
Clearfield and Allegheny, "Derby," "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, $1 25; at Greenwich, Phil.	4 60	5 65

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	7 00	7 25	6 75
Lehigh & Locust Mountain, del'd	7 00	7 50	6 50
Schuylkill Red Ash, del'd	7 00	7 50	

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.

Williamsburgh, N. Y.

Lackawanna Coal at Yard.

Stove	$6 40
Egg	5 90
Chestnut	5 40

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb				$23 00
Liverpool House Cannel	"	"	"	25 00
American "	"	"	"	16 00
American Orrel	"	"	"	11 00
Red Bank Cannel	"	"	"	14 00
Cumberland	"	"	"	7 00

Prices of Lackawanna, Plymouth and Shamokin Coal, for the Month of September, at various points.

Afloat, per ton of 2000 lb. delivered at	Elmira.	Watkins.	Ithaca.	* Syracuse.	† Oswego.	† Rochester.	‡ Buffalo.
Grate	4 50	4 80	4 80	4 95	5 90	5 65	5 90
Egg	4 50	4 80	4 80	4 95	5 90	5 65	5 90
Stove	4 90	5 25	5 25	5 40	6 35	6 10	6 35
Nut	4 65	5 00	5 00	5 15	6 10	5 85	6 10

† Coal is delivered to retail consumers at these points for $1 25 per ton additional to these rates.

* At this point 70c. per ton additional is charged to retail consumers.

‡ At this point 50c. per ton additional is charged to retail consumers.

Baltimore, Md. Sept. 20, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 80	$4 65
Broken	5 46	5 31
Egg	5 77	5 62
Stove	6 02	5 87
Nut	4 90	4 87
Shamokin, (red or white ash), and "Boston," freeburning white ash,		
Egg	5 80	5 62
Stove	6 00	5 87
Lykens Valley, red ash,		
All sizes	6 30	9 12

From wharf or yard, wholesale, 50@75c. additional. By retail, all kinds and sizes, per 2240 lb. $7 00@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 15	4 50
West Virginia f. o. b. at Locust Point		5 50
Youghiogheny Gas, f. o. b. at Locust Point		5 50
Swanton Coal, George's Creek		4 40

Boston. Sept. 22, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 20	Westmoreland and Penn.	6 85
Caledonia	5 00	Waverly Co. Youghiogh'y.	6 80
Pictou	5 60	Cannelton Cannel	11 60
Block House	5 20	Cumberland	5 80@ 6 00
Red Bank Cannel	9 00	Anthracite	6 50@ 7 25
Glace Bay	5 00	" retail	7 50@ 8 00
Sydney	6 25		

There has been no movement of any importance to notice in coal since our last. English cannel has been selling in retail lots at $24 per ton, but in lots to dealers at a less price The supply on the market is quite abundant. Gas coals continue to arrive quite freely at low rates of freight, but were all previously contracted for. Cumberland coal is without change, and the demand continues quite moderate. Nova Scotia coal continues quite dull, and the receipts have been on a smaller scale than for many years. The arrivals of anthracite have been large, and both dealers and manufacturers are now heavily stocked. The sales have ranged from $7@$8 25, as to quality; and cargo prices are nominally $6 50@$7 per ton.—*Shipping List.*

Buffalo, N. Y. Sept. 20, 1875.

Reported by our Special Correspondent.

There has been no change in prices of bituminous coal to note, and trade is very quiet. The gas companies through the interior of the State have some of their last year's stock left or are drawing their supplies from other places, as we hear of few shipments. The city gas companies are still using the coal from the Reynoldsville basin, and claim to like it fairly for a summer coal, not equal to best Youghiogheny or the coal from Pan Handle road. For a winter coal, no doubt, they will need Cannel, to help out the illuminating properties.

In steam coals, the Buffalo Coal Company, on account of its nearness to our market and cheapness, is pushing the Catfish coals for all except locomotive use. The sales are not, however, to an extent that would indicate large profits to stockholders. As they work into the pit no doubt quality will improve and sales increase.

In hard coals, an advance of 5 cents was made on the first in the wholesale rates, but none in the retail. The Coal Exchange is not thoroughly organized and at work yet, though no doubt it will be in a few days.

Prices free on board vessels here are as follows:

ANTHRACITE.

	Afloat.	Retail, Deliv'd.
Grate	$5 90	$6 15
Egg	5 90	6 15
Stove	6 35	6 60
Nut	6 10	6 35

	Lump.	Run of Mine.	Nut.	Slack.	Nut & Slack.
Connellsville Coke	$5 50	....	....	....	....
Brookfield Coal	....	....	....	....	....
Briar Hill	4 50	....	....	....	3 00
Youghiogheny	4 75	....	....	....	....
Monterey	3 75	3 50	3 25	2 50	....
Catfish	3 75	3 50	3 25	2 50	....
Stoneboro	....	....	3 25	2 50	....
Sterling Cannel	5 50	....	....	....	....
Buffalo Coal Co.	3 50	3 25	....	2 30	....

Chicago, Ill. Sept. 20, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

Retail prices per ton of 2000 lb. delivered to buyer.

No change in prices. Receipts of coal liberal—sales moderate.

		BITUMINOUS.	
Lehigh Lump	$10 00	Briar Hill and Erie	@ 7 00
Lehigh grate and egg	10 00	Walnut Hill, Pa	@ 6 00
Lehigh stove and chest.	10 50	Midway, Pa	@ 6 00
Lackawanna, Wilkes-Barre and Pittston*		Cannel	@ 9 00
Grate and egg	9 00	Blossburg	8 00
Stove and chestnut	9 50	Indiana Block	5 50
		Hocking "Brooks"	6 00
		Wilmington and Illinois	4 50

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Cincinnati, O. Sept. 20, 1875.

Reported by our Special Correspondents.

Prices of coal:

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	10 c.	——
Pomeroy coal	6½c.	——
Cannel coal, according to quality	11@16	——
Semi-Cannel	9c.	——

The following are the retail prices delivered:

Youghiogheny	—c.	$3 50
Pomeroy	—c.	3 09
Cannel	—c.	5 50
Kanawha Semi-Cannel	—c.	3 25
Anthracite	9 50@10	——
Foundry coke	—	——
Coke, hard and soft	1cc.	——

Cleveland, O. Sept. 20, 1875.

WHOLESALE.

Per ton of 2000 lb. f. o. b. vessels.

	For vessels,	On cars.
Youghiogheny Gas Coal	$4 40	$4 15
Cannel	4 50	4 15
Blossburgh	5 00	5 00
Briar Hill Block Coal	3 80	3 60
Hocking Valley	3 25	3 10
Straitsville Coal Co., lower vein	3 25	3 10
Mineral Ridge	3 10	3 25
Massillon	3 10	3 30
Tuscarawas Valley	2 85	2 70
Columbiana	2 80	2 60

RETAIL DELIVERED.

	Lump.	Nut.
Briar Hill	$5 00	$3 50
Massillon	4 50	4 00
Mineral Ridge	4 50	4 00
Columbiana	3 25	3 00
Stillwater	3 25	3 00
Tuscarawas Valley	3 25	3 00

ANTHRACITE DELIVERED.

	Grate.	Egg.	Stove.	Chestnut.
Lehigh	$9 00	$9 00	$9 50	$9 25
Wilkes-Barre	7 85	7 85	8 35	8 10
Lackawanna	7 85	7 85	8 35	8 10

—*Manufacturing and Trade Review.*

Detroit, Mich. Sept. 20, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep. sizes	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 50	Erie	7 50
		Massillon	7 00

Erie, Pa. Sept. 20, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb. Bituminous f. o. b.

Briar Hill lump	$3 75	Beaver lump	$3 50
Midway	3 25	Cat Fish	3 00

Indianapolis, Ind. Sept. 20, 1875.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers.

Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

IndianCreek, per ton	$2 75	Peytona cannel, per ton	7 00
White River, "	2 75	Indiana Cannel	6 50
Brazil Block, "	2 65	Hocking Valley	4 25
Highland, grate, "	2 25	Youghiogheny	4 75
Block coal, nut, per car	18 00	Blossburg (smithing)	6 50
Highland " "	18 00	Piedmont "	6 50
Block Slack "	17 00	Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Broken	$9 95	Nut	9 80
Egg	9 95	Stove	10 25

Owing to the Miner's strike there is no Lehigh coal in this market.

Retail, per bushel, delivered.

Sand Creek	15c.	Block Nut, steam	8
White River	14	" Slack, "	
Brazil Block	14	Peytona Cannel	6
Highland grate	14	Indiana "	14
Block Nut, domestic use	12	Youghiogheny	20
Highland Nut, " "	12	Blossburg	26
" " steam	3	Piedmont	26

GAS COKE (measured.)

Crushed	15c.	Lump	12c.

ANTHRACITE.

Wilkes-Barre and Lackawanna (all sizes)	$10 per ton.
Lehigh, retail	$11 50 per ton.

Louisville, Ky. Sept. 20, 1875.

Specially reported by Messrs. BYRNE & SPEED.

WHOLESALE.

	per bushel		per bushel
Pittsburgh	8c	Pine Hill	9c.
Raymond City	9c.	Kentucky	9c.

RETAIL.

	per bushel		per bushel
Pittsburgh	14c.	Peytona Cannel	22c.
Raymond City	12c.	Buckeye "	20c.
Pine Hill	12c.	City-made Coke	12c.
Kentucky	11c.	Anth., per ton, $10 00 to 10 50	
Screened Pittsburgh per load		$3 00	
Screened Raymond City		2 75	
Pine Hill (Kentucky)		2 75	
Cannel		$5 to 5 50	

Milwaukee, Wis. Sept. 20, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.

City and country orders are good; we are very busy. To-day we note an advance of 50 cents per ton in Lackawanna, etc., and quotations read as follows:

Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 00
Lehigh Prepared	11 00	Blossburg	8 00
Lackawanna (all sizes)	10 00	Cannel	8 00
Pittston	10 00	Pittsburgh	7 00
Scranton	10 00	Steam coal	5 00

New Orleans, La. Sept. 18, 1875.

Specially reported by Messrs. P. & R. DE VERGES, Wholesale and Retail Dealers in Pittsburgh, Anthracite, Cannel and other Coals.

Pittsburgh coal, retail, per bbl	60c.
" wholesale	35c.
" steamboats, per box	—
" to manufacturers, per bbl	55c.
" shipments, per hhd	$6 00
Anthracite, wholesale, per ton	....
" retail, "	....
Virginia Cannel, per bbl	75c.
Scotch " "	....
Mt. Carbon, wholesale, per bbl	35c.
" " retail, "	55c.
St. Bernard, wholesale, per bbl	30c.
" retail, "	50c.

Pittsburgh, Pa. Sept. 23, 1875.

COKE.—The general position of the market has not varied much since the date of our last review; business continues dull for this season of the year, but it is all that can reasonably be expected under existing circumstances. The stock in first hands is reported light, as makers, almost without exception, have been working on orders all this year, having apparently resolved not to let stocks accumulate. We continue to quote at $2 65@$2 75 per ton, delivered free on cars in Pittsburgh.

COAL.—There is no improvements to report in the demand, except in a retail way, and from what we can learn trade is unusually dull for this season of the year. The continued suspension of navigation is favorable for those having coal in the down river markets, by preventing an increase in the stocks, and if it continues suspended for a few weeks more, holders will be able to spring prices; indeed, we learn from Louisville, that the price there has been advanced to nine cents per bushel afloat. Prices on cars here are nominally unchanged; at 5½@6c. per bushel for lump, delivered on cars at works, and 4½@5c., for nut coal.—*American Manufacturer.*

Richmond, Va. Sept. 20, 1875.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$12 00	New River Bituminous	$4 50
" semi-Cannel	4 75	Clover Hill Coal	4 25
Coalburgh Splint	4 90	James River Bitum	3 30
Lewiston "	4 90	" " Carbonite	5 80
Kanawha Gas coal	4 50		

San Francisco.

From the *Commercial Herald*, Sept. 9, 1875.

Imports from January 1st to Sept. 1:

Anthracite tons	7,412	English, tons	38,001
Australian, tons	81,616	Vancouver Island, tons	41,599
Coos Bay, tons	23,337	Rocky Mountain, tons	42
Cumberland, tons	6,703	Seattle, tons	39.587
Mt. Diablo, tons (7 mos)	99,356	Bellingham Bay, tons	6 670

We have nothing of encouragement to remark. The supply of bituminous continues large and the price of all descriptions far below the cost of importation. Anthracite continues scarce and high. We quote Bellingham Bay at $8 50; Coos Bay, $10; California Mt. Diablo Steam, $6 25@8 25 for fine and coarse respectively; Cumberland, $16@18; Nanaimo, $9 50@10; Seattle, $9 25@10; Anthracite, $15@25. Lehigh jobbing at $28 @30.

Halifax, N. S. Sept. 15, 1875.

The prices of coal continue unaltered. Freights averaging still about $1.30 to $1.35 per ton or $1.90 to $2 per chaldron, without any likelihood of their being any higher, at least for the present.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 00	Little Glace Bay	3 35
Gowrie	3 35	Blockhouse	3 35
Victoria	—	Albion (at Railroad)	4 00

Montreal. Sept. 20, 1875.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Our market for anthracite has been quiet during the summer with low prices, canal freights ranging in the neighborhood of $2 per ton. An advance of 35 cents in freight and the approach of winter create more enquiry and a firmness in rates.

Bituminous coal has been a drag and has sold at ruinous prices. Scotch coal has been sold at $4.50 per ton, and it has interfered with Provincial coal, which cannot be imported at that price. The consumption of steam coal has materially diminished, many of our large factories having closed up or reduced their work, while others buy only for present needs. We note a slight advance in Scotch coal, which gives more tone to the market. We quote present prices as follows:

Wholesale per ton of 2240 lb.

Scotch Steam	$4 85	Cape Breton Steam	$4 25
Pictou "	4 75	Newcastle Smiths	6 50

Anthracite at retail, per 2000 lb., delivered.

Egg	$7 50	Chestnut	7 25
Stove	8 00		

Toronto, Ont. Sept. 20, 1875.

The following are present retail prices for coal:

Per ton all sizes.

Lackawanna and Scranton	$7 00
Lehigh Lump and prepared	8 00
Blossburgh	6 50
Soft lump for grates	6 00
Soft nut	4 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals, per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton**	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 58	2 44	2 82	2 89	3 14
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	47	70
‡ Phillipsburg, N. J.	98	84	1 35	1 31	1 65
Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 22	2 08	2 82	2 55	2 78
High Bridge, N. J.	2 40	1 95	2 80	2 54	2 72
Somerville and Raritan, N. J.	2 80	2 35	3 20	2 35	3 12
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 62	2 44	3 35	2 91	3 14
¶ Jersey City, N. J., and New York, via L. V. RR. and Morris Canal.	2 85	2 37	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR	3 30	3 10	3 70	3 69	3 99
Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

From *Mauch Chunk* to *New York* (towing limits) and Jersey City† via Lehigh Valley RR. and Morris Canal .. $2 37

From *Mauch Chunk* to *Philadelphia* via L. V. RR. and North Penn. RR 1 75

††From *Phillipsburg, N. J.* to *Hoboken* for shipment via Delaware Lackawanna and Western RR., Morris and Essex Division 1 24

From *Lackawanna Junction* to **Auburn, N. Y.*, for shipment, via Southern Central R.R. in connection with Pa. and N. Y. R.R. 2 59

From *Lackawanna Junction* to ‖*Weedsport* for *Rochester and Charlotte* 2 41

From *Lackawanna Junction* to *Sterling* for *Oswego, N. Y.*.. 2 58

‖ To this point for all places between Rochester and Buffalo the rate is 2 59

* The rate to this point for Syracuse is 2 22

** Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

† Transportation on Coal destined for re-shipment from this point is 20c. less than above rate.

†† The rate for consumption to this point is $1 80.

Freights.

Per ton of 2240 lb.

Representing the latest actual charters up to Sept. 23, 1875.

Ports.	From Philadelphia.	From Baltimore and Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	2 25	....
Albany	*85	1 70	....
Amesbury, Mass	....	....	....
Bangor, Me	†1 60	2 00	1 25
Bath, Me	1 60	1 65	1 30
Baltimore	....	1 50	....
Boston, Mass	§1 50@1 60	1 65	1 30–135
Bridgeport, Ct	*85	1 45	80
Bristol, R. I.	....	....	90
Cambridgeport, Mass	§1 50@1 60	....	1 30
Derby	....	1 60	....
Dighton	....	1 65	....
East Cambridge	1 60§	....	....
Fall River	1 30@1 35	1 50	90
Hackensack	....	....	....
Hallowell, Me	....	....	....
Hartford	1 70	2 00	1 25
Hoboken	†85	1 30	40
Hudson	1 00	1 65	....
Jersey City	....	1 30	40
Lynn, Mass	†1 60	....	†1 30
Middletown	....	....	1 00
Mystic	....	....	....
Newark	....	....	....
New Bedford	1 35	1 50	90
Newburyport	1 65	1 75	1 40
New Haven	*85	1 50	90
New London	1 35	1 55	85
Newport	1 35	1 45	90
New York	85†	‖1 40	40
Norfolk, Va	85	60	....
Norwalk	1 35‡	1 50	80
Norwich	1 35‡	1 65	90
Pawtucket	1 40‡	1 65	‡100
Philadelphia	....	85	....
Portland	1 55	1 50	1 30
Portsmouth, N. H.	1 60	1 80	1 40
Providence	1 35	1 50	90
Petersburg, Va	....	90	....
Portsmouth, Va	....	....	....
Poughkeepsie, N. Y.	*85	1 50	....
Richmond, Va	90	70	....
Rockport	....	....	....
Saco	2 00	....	....
Sag Harbor	....	....	1 00
Salem, Mass	1 60	1 70	1 25
Salisbury Pt., Mass	....	....	1 50
Savannah, Ga	....	1 50	....
Stamford	*85	....	85
Stonington	....	....	....
Taunton	.. .	..	1 30
Trenton, N. J.	....	....	....
Troy	*85	....	....
Warren, R. I.	....	....	90
Washington, D. C.	87½	....	....
Wareham	....	1 65	....
Weymouth	....	1 80	....
Wilmington, Del	....	85	....
Wilmington, N. C.	....	1 50	....

* And discharging and towing. † And discharging.

‡ And towing. § 30c. per bridge extra.

‖ The rate to this point by barge is $1 60.

The Geneva, Ithaca and Athens Railroad Co.

Coal Tariff takes effect September 1st, 1875.

Rates from *State Line*. on a consignment of coal of not less than 25 tons of 2240 lb. will be as follows:

To *Ithaca* (local), 75c.; to *Geneva* (local), $1 50; to *Geneva* or *Cayuga* for *Buffalo* and *Tonawanda*, 90c.; *Geneva* or *Cayuga* for *Rochester* and *Charlotte*, $1 18; *Geneva* or *Cayuga* for *Phelps Junction*, for S P. S. and L. O S. R. R.'s, 92c.; *Geneva* or *Cayuga* for all other points on N. Y. C. R. R., $1 18

Rate from *Lackawanna Junction* to *State Line* on coal for all points on the G. I. & A. (excepting *Geneva*), and C. L. R. R's., $2; *Ithaca* (shipment), $1 41; for *Geneva*, $1 41. For all other points on the N. Y. C. & H. R. R. R., $1 41.

Rate from *State Line* to *Van Ettenville* for all points on the Horseheads Division of the U. I. & E. R. R., 34c. Rate from *Van Ettenville* to any *point* on said Division, 33c.

Rate from *State Line* to *Ithaca*, for *Buffalo, Rochester, Syracuse*, and all other points via Erie Canal, 55c.

Rate L. & B. *Junction* to f. o. b. boats at *Ithaca* for *Buffalo*, or other Canal points, $2 06 per gross ton.

Rate L & B. *Junction* to *Buffalo, Black Rock, Susp. Bridge*, (via *Geneva*), all rail $3 97 per gross ton.

Rate L. & B. *Junction* to *Rochester*, all rail $3 44 per gross ton.

Canal freights, *Ithaca* to *Buffalo*, $1 10 net ton; to Rochester, 75c. (subject to change).

Freight on Nova Scotia Coals.

Pictou, Nova Scotia, to	New York		$1 80
" " "	Portland, Me		2 00
" " "	Montreal, Canada		2 35
" " "	Quebec	"	1 80
" " "	Halifax, N. S.		1 25

Pilotage for vessels of from 80 to 150 tons, $6 inward and $4 outward. From 150 to 1000 tons. 10 to $17 inward and $6 to $12 outward. Vessels of 1000 tons and upwards, 2c. per ton inward and 1¼c. per ton outward.

Towage 3c. per ton. Trimming 3 hatch vessels, 6c. per ton. Two hatch vessels 7c. per ton.

Delaware and Raritan Canal.

Tolls and Steam Towage.

Per 2240 lb. Cargoes to exceed 110 tons.

From Fairmount to	New York, towing limits	within 53d st.		74c.
" Greenwich	"		Bituminous	64c.
" "	"		Anthracite	69c.
" Lambertville	"		Anthracite	62c.
" Port Richmond	"			68c.
" " "	"		Semi-bituminous coal,	63c.
" Philadelphia	"		Cumberland "	58c.
" Trenton	"		Anthracite "	37c.

CANAL TOLLS, exclusive of towage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:

For Anthracite Coal ..... 35c.

Bituminous and Semi-bituminous Coal ... 35c.

Towing.

From foot of 23d Street, East River, and *return*, *per ton*.

	cts.		cts.
Bridgeport, Conn	33⅓	New Haven and Norwalk, Conn	33⅓
Hartford and Stonington, Conn	75	New London, Conn	60
Norwich, Conn	68	*Derby, "	3 ⅓
Stamford, Conn., per boat	$75	Harlem, N. Y., per boat.	$18
Whitestone, L. I.	$30	Glen Cove, L. I.	50

	cts.
Manhattanville, via Hudson River, per ton	8
Harverstraw and Peekskill, via Hudson River	16
West Point and Cold Spring " "	17
Rondout " "	23
Yonkers, boats of 100 tons capacity " " per boat.	$15
Sing Sing and Peekskill " " " "	20

* $ 0 per boat extra is charged for towage to this point.

Boats having less than 200 tons will be charged the same to Eastern points as if carrying that quantity.

THE BRITISH COAL AND IRON TRADES.

LONDON, Sept. 11, 1875.

THE IRON TRADE.

There is a better demand for iron in Wales, and the prices of pig iron in the North of England are a little higher, owing to an active demand from shippers anxious to fill their engagements on the Continent before the close of navigation, and from speculators who sometime ago, sold to deliver, anticipating a decline in prices. With these exceptions, however, no improvement is observable. The finished iron trade, as a rule, continues very quiet, with indications that there will be less doing during the winter, and that many works will have to close, and many workmen be thrown out of employment. A fair business continues to be done by the Bessemer steel works at Sheffield, but at prices not remunerative.

The following are the leading quotations of iron:

	Tees, f.o.b.	Barrow, f.o.b.	Liverpool, on trucks.
No. 1 Pig	58/6	*80/	70/6
No. 2 "	54/6	*77/6	
No. 3 "	53/6	*75/	68/
No. 4 Forge	48	74/	65/
Common Bars	150/		....
Rails	135/@140/		142/6@147/6

* Bessemer Pig.

Common bars in South Staffordshire. £7 10/, and marked bars, £10—12/6 extra for Lord Dudley's. Iron rails in Wales £6 15/, and bars £7 10/@8; Steel rails, £9 10/@£10. Steel rails at Liverpool and on the East Coast, £9 15/@£10 10/.

THE COAL TRADE.

A good demand exists in some districts for steam, household and gas coals, but, on the whole, business is very dull and generally quite unremunerative. The South Durham colliery owners have reduced the price of the best household coals 1/6. Tyne coals are quoted f. o. b. as follows: Best steam 12/6@16/; households, 11/@15/; and gas coals, 8/6@10/. Hetton gas coal f. o. b. Sunderland, 10/; common steam coal at Liveryool 10/. South Wales coals f. o. b. Cardiff as follows: Best double screened steam coal 12/9; colliery screened, 11/3@12/; and best patent fuel, 24/6.

THE CLEVELAND IRONMASTERS' RETURNS FOR AUGUST.

There were 166,241 tons made during the month, as compared with 168.570 tons during the previous month; showing a decrease, last month), of 2,329 tons. Makers' stocks, August 31, were 99.479 tons, as compared with 100,632 tons, July 31; showing a decrease for August of 1.153 tons. There were 113 furnaces blowing at the end of the month, as compared with 114 at the end of July. There are 9 furnaces building.

THE IRON AND STEEL INSTITUTE MEETING.

The summer meeting of the Iron and Steel Institute began at Manchester last Monday, the 6th inst., and was very well attended. The following papers were read: "On High-pressure Steam generally, and its Application to Quadruple Engines," by Mr. DANIEL ADAMSON, F. G. S.; "On the Use of Caustic Lime in the Blast Furnace," by Mr. I. LOWTHIAN BELL, M. P.; "On the Designing of Ingot Moulds for Steel Rail Ingots," by Mr. WILLIAM HACKNEY; "Further Improvements in Blast Furnace Hearths," by Mr. CHARLES WOOD; "The North Staffordshire Coal Field, with the Ironstones contained therein"

THE LABOR MARKET.

The workmen in the steel department of the Barrow Hematite Iron and Steel Company's Works have been asked to submit to a reduction of 5 per cent., to which the hammermen and railmakers object. Both the workmen and the company appear firm in their determinations.

The umpire in the arbitration between the masters and miners in North Staffordshire has made an award of 12½ per cent. reduction, or 2½ per cent. more than was asked by the masters.

The South Yorkshire and North Derbyshire coal owners have concluded to postpone a reduction of 10 per cent. on miners' wages.

A movement is on foot to reduce the wages of the Durham pitmen.

SCOTLAND.

THE IRON TRADE.

Our advices to September 10th quote the Warrant Market 64/6, or a fraction higher than the week previous, with business rather better.

Stocks in CONNALL & Co.'s stores are still increasing,

and on the 10th inst. were 55 532 tons, as compared with 18,942 tons at the corresponding date last year. The number of furnaces in blast was 114, as against 110 last year; and the shipments for the week, ending September 4th, were 10,616 tons, being an increase of 1133 tons over the corresponding week of last year. The total shipments, both coastwise and foreign, from the 25th December, 1874, to 10th September, 1875, exceeded those of the corresponding period of 1874, by 90,837 tons. Freights to New York, 5/; to Boston, 14/; New Orleans, 5@6/; Philadelphia, 12/; Montreal, 12/; Rio Janeiro, 27/; Buenos Ayres, 30/; San Francisco, 27/6.

The following are quotations for some of the principal makers' brands, No. 1 iron Gartsherrie, 72/6; Coltnes, 75/; Summerlee, 66/; Langloan, 74/; Glengarnock, 68/6; Eglinton, 64/.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, Sept. 24, 1875.

American Pig.—There is but little change observable; the demand continues to be very light, and prices weak. We note sales of 300 tons of Lehigh forge at $21 50 at furnace; 100 tons of Lehigh No. 1 foundry at $26; 50 tons of Roberts No. 1 foundry at $25; 50 tons of Poughkeepsie No. 1 foundry on private terms; and about 400 tons of Thomas mixed brands at $25 for No. 1 foundry, $24 for No. 2 foundry, and $23 for forge. We quote No. 1 foundry at 25@$26; No. 2 at 22@$24; and forge at 21@$23. The more general quotations are on the basis of $25 for No. 1 foundry.

The following extracts are from letters of 20th and 23d inst., from Mr. F. B. GOWEN, President of the Philadelphia and Reading Coal and Iron Co., to T. D. HAZARD, of 204 street, New York:

"Our proposition to the furnaces of the Schuylkill Valley was confined to a few of them who have accepted it. We are not making it to any others. It is a matter of very much less importance than is usually supposed. None of the product of iron received will be sold upon the market at the present low prices."

Scotch Pig.—There is a little more doing in Scotch iron, which, however, is still very dull. Under the influence of the advance in Scotland, prices here are more firm. We quote Eglinton at $29@$30; Gartsherrie, $32 50@$33; Coltness, $32; and Monkland, $30, although these prices are lower than the present cost of importing; Coltness, for instance, which is quoted at $33, cannot be imported, at present quotations in Glasgow, for less than $35. Cable quotations, the latter part of last week, were f. o. b. Glasgow as follows: Gartsherrie 78/; Coltness, 85/; Langloan, 78/; Summerlee, 68/; Glengarnock, 71/; Carnbroe, 68/; Eglinton, 67/; Monkland, 66/; and Clyde, 67/. Later quotations note a decline of 1/6 in Eglinton. We have mail advices of a week earlier which, compared with the above quotations, show that prices advanced from 2/@10/ in a week. Stocks in Scotland, according to our advices, continued to increase and it is quite evident that the advance is the result of speculators being compelled to fill contracts made some time ago with the belief that iron would continue to decline. Holders knowing the necessities of the speculators are making them pay advanced rates. The shipment for the week ending the 10th inst. were only about 1100 tons greater than for the corresponding week of 1874, when prices were about one-third higher than now, which is certainly not a business to warrant such unusual advances.

Rails.—We are reported a sale of 1,000 tons of steel rails on private terms. There are some inquiries in the market. We quote iron rails at $45@$50 at mills, and steel $70@$75.

Old Rails.—There appears to be considerable inquiry for old rails, but the would-be buyers do not appear to be willing to pay the prices asked. We quote at $27 @$27 50.

Scrap.—Without learning of any business, we quote at $32 50@$34 for No. 1 wrought. We are informed that there has been an offer equivalent to $32 in the market, which did not secure the quantity desired.

Philadelphia, Pa.

Weekly report of the Philadelphia Iron Market, furnished by Messrs. JUSTICE COX, JR., & Co., Iron Merchants, 333 Walnut street, Philadelphia. Week ending September 23d, 1875.

American Pig.—The market is about as last week, and has been for some weeks void of interest. We hear of sales of 500 tons No. 2 x Carbon to a pipe foundry on private terms; 500 tons No. 2 x Montgomery at quotations; 300 tons gray forge Grubb St. Charles, at quotations, and many small sales of Chickies, Crane and Allentown at quoted prices. We quote: No. 1, $25@$26; No. 2, $23 @$24; gray forge, $21@$24.

New Rails.—There is some inquiry for new rails at low prices. We quote $45 to $50 at mill.

Old Rails.—We quote $26@$27.

Scrap.—Good scrap is in demand and scarce at $31 @$34.

Baltimore. Sept 22, 1875.

Specially reported by Messrs. R. C. HOFFMAN & Co.

There has been no material change in the iron market since our last report. The same depression exists and prices favor buyers, especially in anthracite irons, which are weak at quotations.

Baltimore Charcoal	$31@35	Anthracite No. 3	$22@23
Virginia Charcoal	29@34	Mottled and White	15@21
Anthracite No. 1	25@26	Charcoal C. B Blooms,	72@75
" No. 2	23@24	Refined Blooms	60@65

Boston. Sept. 22, 1875.

IRON.—Dealers in pig iron report an exceedingly dull market, with a weak tendency in prices. American No. 1 brands are quoted at $28@$30 per ton, in lots as wanted from store, but buyers in good standing can get concessions on these figures; and No. 2 brands are nominally $25@$26 per ton. We continue to quote Scotch pig at $33@$35 per ton, including Eglinton and Coltness, but none of any consequence selling. Refined bar iron is dull at $57@$58 per ton, with sales only in retail lots Common bar is quoted by dealers at $52@$53 per ton, but very little selling. Common sheet is selling at 4c.@5c., currency; and Russia sheet at 13½c.@13¾c., gold. In rails no movement of importance, and prices nominal.

Imports of pig iron from Jan. 1 to Sept. 18:

	1874.	1875.
From Great Britain, tons	2 775	1,400
Coastwise	7,914	9,752

LEAD.—There are no new features to report in the market for pig lead. Foreign is out of stock and prices nominal; and domestic is selling in small lots at 6c., gold. Sheet and lead pipe are selling moderately at 9½c., tin-lined pipe at 16½c., and block tin pipe at 45c. per lb.

Imports from January 1 to Sept. 18:

	1874.	1875.
Pigs	72,923	22,054

COPPER.—Sheathing is steady at 30c., bolts and braziers at 31c., and yellow metal sheathing at 22c. per lb. Trade in manufactures has started up a little, but the demand is still comparatively light. Ingot is firmly held, with small sales here at 23½c.@23¾c. per lb.

TIN. There is an easier feeling in the market for pig, with sales of 250 pig Straits in New York at 18¼c. per lb., gold. Holders generally ask 19c.

TIN PLATES.—The demand is light for the season, and prices are weak. We quote currency rates as follows: Charcoal I. C. at $9@$9 25; coke at $7 50@$8; and terne, including all kinds, at $7 50@$10 per box.—*Shipping List.*

Chicago. Sept. 22, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

No. 1 Coltness	$41 00@	No. 2, " " "	23 00@24 00
No. 1 Gartsherrie	40 00@	No. 1, Mill, " " "	22 00@23 00
No. 1 Summerlee	39 00@	No. 1, foundry, from Alabama, Georgia and Tennessee ores	23 00@24 00
No. 1 Glengarnock	38 00@	No. 2, foundry, from Ala., Geor'a and Tenn. ores	21 00@22 00
No. 1 Eglinton	37 00@	No. 1, Mill, from " " "	22 00@23 00
Warner's "American Scotch"	34 00@		
Massilon No. 1 Foundry	33 00@		
No. 1 Grand Tower Mo. ores (Bituminous)	30 00@		
No. 2, " " "	28 00@		
No. 1 Mill	26 00@		
Union "A" 1 (Anthracite)	28 00@		
Union "B" 1 (Anthracite)	27 00@		
No. 1 Lake Superior (charcoal)	30 00@		
No. 2 Lake Superior "	29 00@		
No. 3 Lake Superior "	30 00@		
No. 4 Lake Superior "	32 00@		
Bessemer Steel Rails	73 00@		
New Iron Rails	50 00@ ...		
Old Rails	28 00@		

Cincinnati. Sept 22, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

Below please find closing quotations of our pig iron market, viz.:

CHARCOAL.

Hanging Rock, No. 1 Foundry	$26 00@27 00	4 mos
" No 2, "	24 00@25 00	4 mos
" Mill	23 00@24 00	4 mos
Tennessee No. 1, Foundry	24 00@25 00	4 mos
Tennessee, No. 2, "	23 00@24 00	4 mos
" Mill	23 00@24 00	4 mos
Missouri, No. 1, Foundry	@	4 mos

STONE COAL.

Ohio, No. 1, Foundry	23 00@24 00	4 mos
" No. 2, "	22 00@23 00	4 mos
Ohio Mill	22 00@23 00	4 mos
Missouri, No. 1 Foundry	27 00@28 00	4 mos
" No. 2, "	26 00@27 00	4 mos
" Mill	26 00@27 00	4 mos

CAR-WHEELS.

Hanging Rock, C. B	40 00@50 00	4 mos
Tennessee "	30 00@40 00	4 mos
Missouri "	35 00@40 00	4 mos
Alabama "	30 00@40 00	4 mos

BLOOMS.

Charcoal	70 00@ 80 00	cash

SCRAP IRON.

Cast	60c.@ 90	cash
Wrought	1 00@1 40	cash

Louisville. Sept. 20, 1875.

Specially reported by Messrs. GEORGE H. HULL & Co.

The market for the past week has been moderately brisk, but operations have been almost wholly confined to No. 1 foundry charcoal and mill grades. Prices are exceedingly low, and the tone of the market very little if any firmer than heretofore. The usual time, four months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock Ores	$25 00@26 00
No. 2 " " "	23 00@24 00
No. 1, Mill, from " "	22 00@23 00
No. 1, foundry, from Alabama, Georgia and Tennessee ores	23 00@24 00
No. 2, foundry, from Ala., Geor'a and Tenn. ores	21 00@22 00
No. 1, Mill, from " " " " "	22 00@23 00

HOT BLAST—STONE COAL AND COKE.

No. 1, foundry, from Hanging Rock ores	23 00@24 00
No. 2, " " " " "	22 00@23 00
No. 1, Mill, " " " " "	21 00@22 00
No. 1, foundry, from Ala. Ca. and Tenn. ores	23 00@24 00
No. 2, " " " " "	22 00@23 00
No. 1, Mill, " " " " "	21 00@22 00
No. 1 foundry, from Missouri ores	24 00@25 00
No. 2 foundry, from Missouri ores	24 00@25 00
No. 1 Mill, from Missouri ores	26 00@27 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores	35 00@40 00
" " Tennessee "	28 00@30 00
" " Alabama and Georgia ores	28 00@30 00
" " Kentucky ores	28 00@40 00

Milwaukee. Sept. 20, 1875.

The following are the present prices, per ton of 2,240 lb.:—

Frankfort L. S. Charcoal,	No. 1	$30 00
" " "	No. 2 & 3	28 00
" " "	No. 4 & 5	31 00
" " "	No. 6	35 00
Mil. Anthracite L. S.,	No. 1	30 00
" " "	No. 2	28 00
Wisconsin Iron,	No. 1	26 00
Mahoning Valley Bit's	No. 1	32 00
" " "	No. 2	30 00

Pittsburgh. Sept. 22, 1875.

Specially reported by A. H. CHILDS, Esq., Commission Merchant for the sale of pig iron, blooms, ore, etc.

No 1. foundry	$27 00@28 00	4 mos
" 2. "	25 00@26 00	4 mos
Gray forge	24 00@....	4 mos
White and mottled	22 00@23 00	4 mos
Hot blast charcoal	27 00@31 00	4 mos
Cold blast charcoal	35 00@40 00	4 mos

PIG IRON.—The general position of the pig iron trade, so far at least as Pittsburgh is concerned, remains as noted in our last review. Business continues quiet. The demand is still restricted entirely to supplying immediate wants. The demand for manufactured goods continues unusually light, and prices are unremunerative. No. 1 gray forge may be quoted at $24, four months. Foundry iron continues very dull, and prices are weak, although nominally unchanged.

MANUFACTURED IRON.—While the mills are nearly all in operation, some of them are reported as having scarcely sufficient orders to absorb their production working single turn, and there is no improvement in prices. Prices of American iron are so low now as to prevent the importation of foreign goods, and this accounts for business keeping up here, also for the depression prevailing in the foreign markets that formerly exported largely to this country. We continue to quote on a basis of 2.30@2.40 for merchant bars, 60 days, with the usual discount of two per cent. for cash.

STEEL.—There is nothing particularly new or important to record in connection with the steel trade. Business continues fairly active for some kinds of steel. Including that used in the manufacture of agricultural implements there has been an active demand, but in this and almost every other branch of the business it is complained that prices have been cut so close that there is little or no margin. In consequence of its being so much cheaper, American has taken the place of foreign, which accounts for the fact that our steel mills, with but few exceptions, have been running steadily ever since the panic.

CASTINGS.—Some of our large machine foundries are pretty well supplied with orders. Several of them are working full time and full force, but the stove trade continues dull.

PIG METAL SALES REPORTED FOR THE WEEK ENDING SEPT. 15, 1875.

BITUMINOUS COAL OR COKE SMELTED FROM LAKE SUPERIOR ORE OR LAKE SUPERIOR AND NATIVE.

50 tons No. 1 foundry, N	$25 50	4 mos.
30 tons No. 2 foundry, N	25 00	4 mos.
20 tons No. 2 foundry, N	25 00	cash.
400 tons gray forge	24 00	4 mos.
600 tons gray forge	24 00	5 mos.
900 tons gray forge		P. T.
150 tons white and mottled	22 50	4 mos.

ANTHRACITE.

20 tons No. 2 foundry	$24 00	5 mos.

CHARCOAL.

20 tons No. 1 foundry, H. R.	$29@32	4 mos.
50 tons No. 2 foundry, H. R.	28 00	4 mos.
20 tons cold blast, H. R.	40 00	4 mos.

BLOOMS.

20 tons anthracite	60 00	6 mos.

American Manufacturer.

Richmond, Va. Sept. 20, 1875.

Reported by ASA SNYDER, Esq.

Virginia	Cold Blast	Charcoal	Pig Iron		$30	to $35
"	Warm "	"	"	"	28	to 32
"	" "	Coke	"	" 1 X	26	to 27
"	" "	"	"	" 2 X	25	to 26
"	" "	"	"	" 3	24	to 25
"	Anthracite		1 X		27	to 29
"	"		2 X		26	to 27

San Francisco, Cal.

From the *Commercial Herald*, Sep. 9, 1875.

The large importation of Scotch Pig Iron, say 1,100 tons, per *Airlie*, has for the most part gone into bond. Our stock seems to be steadily accumulating and prices ease off to accomodate themselves to those sales made some time since to arrive at or about $34. We see that there is another stoppage in the supply at the Oswego (Oregon) Iron Works for the purpose of repairs. The steamer *Oriflamme* brought down this week but 20 tons, making only about 100 tons received within a month past from Oregon—price, $40. The demand for Tin Plate is surprisingly small, and quotations are entirely nominal. The stock is thought to be large. The supply of Sydney Pig Tin is liberal, with a limited demand;

price, 22½c. Banca Tin is held at 25@26c. The stock of Yellow Metal is not large, and when suits are required they are ordered from the East by rail. The market for American Cast Steel is well supplied, and is fast taking the place of best brands of English. The trade are carrying large stocks of manufactured iron—bar, sheet, bundle, etc.—prices of which remain the same as for a long time past. Selby's Pig, Sheet and Bar Lead is in good stock, and prices unchanged. We quote spot lots Scotch and English Pig Iron at $35@38, in lots, according to brand and quantity. Invoices of same to arrive can be bought at $32@33.

METALS.

NEW YORK, Friday Evening, Sept. 24, 1875.

There is much more business doing in metals than for some time past, and a better feeling exists, with an inclination to advance the prices of some articles, and a firm tendency to all others.

ERNEST W. G. MURRANT ESQ., of London, under date of September 10, says :—"No change of importance has occurred during the past week in the prices of the leading metals. The demand for manufactured for export is still light; and comparatively little business is doing."

Gold Coin.—During the week past gold has ranged from 116¼@117¼ and closed at 116¼.

Bullion.—Fine silver bar is quoted at $1.22@$1.23, gold, per ounce, and fine gold bar at par ($20 67, gold, per ounce,) to ¼ per cent. premium.

Copper.—There has been more inquiry, and the sales for the week under review aggregate about 400,000 lb. at 23¼@23½c. 23⅛@23¼c. is asked to-day, and 23¼c. bid. This article is inclined to firmness.

The latest cable advices quoted Chili bars in London at £81@81 10/. Last Saturday's advices quoted best selected at £88.

Of Copper Mr. MURRANT says :—"Chili.—On Thursday last the charters from the West Coast for the second fortnight in August were advised as 3 000 tons, of which about 1,200 bars and 1,000 regulus for the United Kingdom, and 700 bars to France. Price of bars on the Coast $18 55, equal to about £81 7/6d. per ton in warehouse on this side, without merchants' commissions. The effect of these somewhat heavy charters was the sale of g. o. bs. to a considerable extent by holders as low as £81 10/ for cash. The market has since been nominally rather better. The reported business has been 700 tons g. o. bs., and named brands at £81 10/ to £83, for cash and prompt."

Tin.—There has been a great deal more doing in this article during the past week and prices are much more firm from this cause and owing to an advance in London, where Straits is quoted, (as per cable to-day) at £86, or an advance of £2 10/ since our last. We quote as follows: Straits, 19½c.; Refined, 19½c.; L. & F. 19@19½c.; and Banca, 23½c. prices all gold. A further advance both here and in Europe is anticipated. Yesterday the Singapore quotation was $22¾ per picul.

Of Tin Mr. MURRANT says :—"In Straits a fair business has been transacted, but no material alteration in values has taken place. An improvement in prices is much hoped for, as most of that now held shows a considerable loss. The week's reported sales have been 300 tons Straits, and 150 tons Australian at 80/ to 81/ 6d. for cash and arrival."

The Dutch Trading Company have declared 22,900 Slabs Banca for their sale in Holland on 29th inst.

Tin Plates.—There has been a very good demand for tin plates, although the orders have been mostly in a small way, yet aggregating largely. Charcoal tins are quoted at $7 50@7 75 gold per box, and ternes $7 25@7 50; Coke tins, $6 50@6 75; and ternes $6 12½@6 37½. There appears to be an inclination to advance tin plates owing to five large works in England having stopped work and rumors that others will follow.

Messrs. ROBERT CROOKS & Co., of Liverpool, under date September 9th, say of Tin Plates :—"Demand continues without improvement, and there is no change in the position of the trade. The makers who have an extended constituency are getting much better prices than those who are not so well placed, and their quotations are consequently two shillings or more higher than plates of same intrinsic value offered by other makers."

Lead.—We are reported sales aggregating about 130 tons, at $5 75@$5 80 gold, which are the asking prices to-day. There is but little demand, with no indications of a great revival; and as stocks are not showing an important increase, there is nothing to indicate an immediate decline in prices. We note a sale of 20 tons of ordinary foreign at 7½c. gold.

Spelter and Zinc.—There is but little doing in Spelter, which is quoted at 7½c. currency for domestic, and 7½c@7⅝c. gold for foreign. Sheet Zinc is firm at 8½c. gold, with a fair business doing.

Antimony.—Under a moderate business, antimony is firm at 13½c. gold per lb.

Quicksilver.—The quotation in this city is 75c., and San Francisco, 70c. gold per lb. In London, £12.

The *Commercial Herald*, of Sep. 9, says :—The advices from London of an unexpected character note an advance of some importance in that market, now 11 guineas, say £11 11/. Upon the receipt of the first rise at the close of last week, prices here rose immediately from 60@62½c. to 65c. with sales of 500 flasks in lots, but now held firmly at 70c. More business would be done here at the rise for export to China were it not for the difficulty experienced at the moment in selling Sterling Bills of Exchange.

Our exports by sea for August, 1874-5, were as follows :

	1874.		1875.	
To	*Flasks.*	*Value.*	*Flasks.*	*Value.*
China	200	$22,185	1,511	$80,738
Japan	35	3,409	264	13,883
Mexico	180	18,400	290	15,003
New Zealand	....	.....	20	1,033
South America	....	.....	904	45,768
Australia	....	.....	63	3,254
Totals	415	$43,991	3,052	$159,684

Our monthly receipts of this article compare with 1874 as follows :

	1874.		1875.	
MONTHS.	*Bay, flasks.*	*Coast, flasks.*	*Bay, flasks.*	*Coast, flasks.*
January	972	25	1,605	2
February	1,709	..	3,284	309
March	1,803	..	3,779	465
April	1,862	..	3,718	100
May	1,964	20	3,298	303
June	1,845	..	3,766	320
July	1,923	..	4,229	428
August	2,132	15	4,016	269
Totals	14,237	60	27,705	2,196
Increase in 1875	11,584	1,882		

FINANCIAL.

New York Stocks.

FRIDAY, September 24, 1875.

With the exception of a slight improvement in Quicksilver and the Mariposa Mining Company's stock, the New York Stock Market has been generally tame during the operations of the week. Sales show an increase of some 3,000 shares over those reported in our last, with but slight variations in quotations.

Railroad bonds are firm, and the dealings for the week exhibit a material increase compared with those reported in our last.

The usual quarterly dividend of $2.50 per share on the capital stock of the United New Jersey Railroad and Canal Company has been declared and will be paid on and after Oct. 9th next, at the office of the Pennsylvania Railroad, No. 57 Broadway, and No. 233 South Fourth street, Philadelphia. This stock was quoted at 129¾ at the close.

Quotations and Sales of Stocks and Bonds,

For the week ending Sept. 24, 1875.

STOCKS.

	Highest	Lowest	Closing	Shares sold.
Pennsylvania Coal Co	—	—	275	—
Consolidation Coal Co	45¾	44¾	45¼	1000
Spring Mt. Coal Co	—	—	61	—
American Coal Co	—	—	50	100
Maryland Coal Co	17¾	17	17¾	200
Cumberland Coal and Iron Co	—	—	116	—
Del., Lack., and West. RR. Co	121	119	120¼	3524
New Jersey Central RR. Co	111⅛	110⅛	111	675
Delaware and Hudson Canal Co	—	—	120	85
Quicksilver Mining Co. pref'd	22	20½	22	615
" " " Common	15½	15	15	200
Mariposa Land & Min. Co. various	10¾	9	10¾	1313
St. Louis & Iron Mountain RR	17	16	16	215
Lehigh & Wilkes-Barre Coal Co	—	—	—	—
Total Shares sold				7927
Sales for the week previous				4721
Increase				3260

BONDS.

	Sales.		Price
Ches. & O. R. R. 6s, 1st mtge	—	.....	— @ 30
" " " ex coupon	—	.....	— @ 25
Central RR. of N. J. 1st Mtg. N	5,000	.....	— @111
" " " 1st Cons.	51,000	.....	— @108¾
" " " Cons. Convt.	25,000	.....	110½@110¾
Del. and H. Canal, 1st Mtg. '94	1,000	.....	— @110
" " 7s, '77	3,000	.....	— @103
" " Reg. '91	4,000	.....	— @111
Del., Lack. & W. R. R., 7s, conv.	—	.....	— @120
" " " " 2d Mtg.	—	.....	— @110
St. Louis & Iron Mount'n 1st Mtg.	—	.....	— @ 90½
St. Louis & Iron M'tn, 2d Mtg.	—	.....	— @ 53⅛
Total Sales	$89,000		

Closing quotations in the absence of sales, represent the latest prices bid.

Philadelphia Stocks.

PHILADELPHIA, Sept. 24, 1875.

The Philadelphia Stock Market partakes of the same dull feeling which pervades the New York Market. Sales for the week exhibit a decided decrease compared with those reported in our last, with quotations within a fraction of those ruling a week ago. At auction, on the 21st inst., $18,000 Emaus Iron Company's 1st mortgage bonds, guaranteed by the Philadelphia and Reading R. R. Co., sold at 91; also $500 Globe Smelting Company bonds at .05.

Bonds have been quite active during the week at improved prices.

Quotations and Sales of Stocks and Bonds,

For the week ending Sept. 24, 1875.

STOCKS.

	Highest	Lowest	Closing	Shr's
Lehigh Valley RR. Co	62¾	61¾	61¾*	515
Pennsylvania RR.	50¾	50¼	50¼	15800
Reading RR.	56¾	56⅜	56⅜	2205
Lehigh Coal and Nav. Co	50¼	50	50⅛	3053
Buck Mountain Coal Co.	—	—	—	—
Fulton Coal Co	—	—	3⅛	—
Locust Mountain Coal Co	—	—	—	—
Westmoreland Coal Co		—	85	—
Cambria Iron Co	—	—	—	—
Crane Iron Co	—	—	—	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co	75	74¾	74¾	200
Total shares sold				21,773
Sales for the week previous				30,806
Decrease				9,033

* Ex. Dividend.

BONDS.

	Sales.		Price
H and B. T. RR. 1st mortgage, 7s	—	.....	— @106
" " " 2d " "	—	.....	— @101
" " " 3d " cons	2,000	.....	— @ 54
Lehigh Valley RR. 6s, '98	3,000	.....	— @105
" " " 7s, 1910	10,000	.....	110 @110½
" " " con. mtge. 6s reg	32,000	.....	99¼@ 99¾
Pennsylvania RR., 1st mtge. 6s	3,000	.....	— @104⅛
" gen. " reg. 1910	3,000	.....	— @103¼
" " gen. " 6s, cou	1,000	.....	— @101
Phil. & Reading RR. 6s, 44-80	—	.....	— @103
" deb. bonds	1,400	.....	81⅛@ 81¾
" " " G. M. 7s, cou. 1911	8,000	.....	— @108
" " " reg. 1911	—	.....	— @107
" " new convertible 7s, '93	4,000	.....	— @109
Phil. & Reading C. & I. Co. 7s deb. '92	6,000	.....	— @ 81⅛
" " " M. 7s, Helf. tract.	—	.....	— @ —
Lehigh Coal & Nav. Co., 6s '84	2,000	.....	— @102⅛
" " " RR., '97	1,000	.....	— @103¾
" " " '77	—	.....	— @ 96
" " " conv. gold '82	4,000	.....	— @105
" " " " g. '94	—	.....	— @104
" " " gold, '97	33,000	.....	103⅛@103¾
Penn. Canal, 6s	1,000	.....	— @ 68⅛
Penn. and N. Y. Canal, 7s	—	.....	— @107⅛
Susquehanna Coal Co. 7s	—	.....	— @ 70
Total amount of sales	$114,400		

Closing quotations, in the absence of sales, represent the latest prices bid.

(BY CABLE.)

London.

FRIDAY, September 24, 1875.—3 P. M.

The London Stock market closed to day at a slight decline from quotations reported in our last. American Securities are in fair request.

Bank of England rate unchanged.

Philadelphia and Reading R.R.	50½
Pennsylvania R.R.	44½
United States 5-20s new	105
Consols for money	94¼

Gold and Silver Stocks.

SAN FRANCISCO, Sept. 23, 1875.

The condition of affairs in San Francisco is gradually improving, and confidence seems to be almost fully restored. The Bank of California will open on the 1st proximo, as was expected, a meeting of the stockholders being called for the 5th October. It is stated that the Guarantee Fund, subscribed by the Syndicate of the Board, amounts to from eight to ten million dollars. This amount will be paid into the bank in gold, and will be immediately available for business requirements. The opening of the Bank of Nevada with a paid-up capital of $5,000,000 gold, is also anticipated at the same time as that proposed for reopening the Bank of California; so with increased facilities and means for transacting business, we may reasonably expect to see a revival of prices and speculation in mining securities.

We append some sales of stocks made through the California Board of Brokers, under date of September 17th—prices are barely maintained, compared with quotations ruling immediately before the panic. These quotations, however, can hardly be considered fairly indicative of the true value of the stocks, owing to the scarcity of speculative capital.

The Empire Mining Company of Grass Valley, Cal., has declared a dividend of 50c. per share, equal to $10,000, payable September 15th. The coinage of the San Francisco Mint, for the month of August, amounted to $4,510,000, being the largest amount coined, for the same period, in the history of the institution.

In the lower levels of the Crown Point mine ore has been struck, assaying from $30 to $35 per ton.

The present product of of the Ophir mine is equal to $20 000 per day.

It is stated that the *placer* diggings of Summit County, Colorado, have produced about $100,000 in gold during the season.

The Savage mine is drifting north and south on the lowest level, 2,200 feet below the surface.

The San Francisco *Stock Report* is authority for the statement that the mining stock assessments on this coast aggregate $37,469,063, and the dividends disbursed $65,261,499, showing an excess of nearly $28,000,000 in dividends.

The reports from the Consolidated Virginia and California mines continue as favorable as ever, and great efforts are now being made to bring them into fuller working capacity. The first shipment from the Consolidated Virginia mine since the last dividend, amounts to $180,300. The California mill will add a crushing capacity of 8,000 tons per month after the first of November.

QUOTATIONS :

	No. of shares.	Aug. 25.	Sept. 17.
Sierra Nevada	100,000	$15	
Union Consolidated	100,000	8	
Mexican	108,000	19	
Ophir	108,000	55	49
California	540,000	57	57
Consolidated Virginia	108,000	265	264
Best & Belcher	100,800	47	41
Gould & Curry	108,000	17	17
Savage	16,000	88	78
Hale and Norcross	16,000	47	33
Chollar Potosi	28,000	75	
Alpha Consolidated	30,000	18	16
Imperial	100,000	21	9
Yellow Jacket	24,000	58	55
Kentuck	30,000	16	
Crown Point	100,000	26	23
Belcher	104,000	25	20
Overman	38,400	51	44
Caledonia	20,000	18	15
Raymond & Ely	30,000	33	
Meadow Valley	60,000	5	
Eureka Consolidated	50,000	27	
Eureka G. V.	20,000	7	

Copper Stocks.

BOSTON, Thursday Evening, Sept. 23, 1875.

Specially reported by WILSON W. FAY & Co., Bankers and Brokers, Room 7, Traveller Building, 31 State street, Boston, Mass.

There is nothing doing in mining stocks, prices of most of the stocks being as near stereotyped as it is possible to be.

Allouez is better, closing at $17.50 bid, against $15.00 one week ago; but as this stock is held and controlled by a clique, the rest of the list does not seem to derive any inspiration from it.

Eastern R. R. shares have again been the feature for the week, selling one week ago at 39¾, and declining to 30 this morning, "the lowest figure it has ever reached," and rallying again this P. M. to 31¼.

DESCRIPTION.	Par Value.	No. of Shares.	CLOSING. Bid.	Asked.
Allouez	$50	20 000	$17½	$18
Calumet and Hecla	50	80,000	159	159 25
Central	25	20,000	35 25	35 75
Copper Falls	25	20,000	8¼	8⅜
Dana	25	20,000	.25	30
Duncan Silver	20	60,000	70	75
Franklin	25	20,000	13 50	14
Humboldt	25	20,000	¼	30
Madison	25	20,000	¼	30
Menard	25	20,000	60	67
Minnesota	25	20,000	2	2 50
National	15	20,000	2 25	2 50
Petherick	25	20,000	70	75
Pewabic	25	20,000	5	5¼
Phenix	25	20,000	15¼	16
Quincy	25	20,000	41	41¼
Ridge	25	20,000	7	7¼
Rockland	25	20,000	⅝	¾
Silver Islet	—	—	15½	16
Star	25	20,000	27	30
Superior	25	20,000	18	20

Gas Stocks.

NEW YORK, Sept. ,24 1875.

Transactions in gas stocks during the week under review have been very limited, with but slight alterations in quotations. We note sales at auction during the week of the Manhattan Gas Light Co.'s stock, of New York, at $306 per share; also of the Metropolitan Gas Light Co.'s stock, of New York, at $166 per share, and their scrip at $105; 85 shares of the San Francisco Gas Light Co. changed hands at $92 per share, ex-dividend. The Middletown, Mass., Gas Light Co. has declared a dividend of 4 per cent.

We are indebted to the courtesy of Messrs. W. B. SCOTT & Co., Bankers and Dealers in Gas Stocks, No. 24 Pine street, New York, for much of the information contained in the following tables:

COMPANIES.	Cap. Stk.	Par.	Bid.	Askd.
Mutual Gas Light Co., N.Y. City	$5,000,000	$100	108	109
New York " " " "	4,000,000	100	150	156
Metropolitan " " " "	2,500,000	100	155	160
Manhattan " " " ..	4,000,000	50	297½	300
Harlem " " " "	1.850,000	50	133	
Westchester Co. " New York.	466,000	100	100	
Brooklyn " " " Brooklyn..	2,000,000	25	245	250
Citizen's " " " "	1,200,000	20	150	
People's " " " "	1,000,000	10	100	101
Nassau " " " " ...	1,000,000	25	127	
Metropolitan " " "	1,000,000	100	105	107
Williamsburgh " " " ...	1,000,000	50	142	
J. C. and Hob'n. G. L. Co. N.J.	386,000		160	
People's " " of J. C.....			130	
Citizen's G. L. Co., Newark, N.J.				65
Hempstead " " L. I., N.Y.	40,000	100		100
Jamaica, " " " "	25,000	100		100
Citizens', Rochester, "		100	50	65
People's G. L. Co. Albany,"	1,000,000	100	45	
Mutual " Buffalo "	750,000	100	50	
Troy G. L. Co., Troy, N. Y.....			108	
Brockport, N. Y., G. L. Co.	25,000	100		90
Baltimore G L. Co., Balt., Md.	2,000,000	100	190	200
People's G. L. Co., Balt., Md	2,000,000	25	26	27
Hannibal G. L. Co., Hanni., Mo.	100,000	100	90	
Lewiston G. L. Co., Lewis., Me	400,000	100		80
Chicago G. L. Co., Chicago, Ill.	2,000,000	100	145	150
Derby G. L. Co., Derby, Conn..	160,000	100		80
Woonskt G. L. Co. Woonskt, R.I.	150,000	100	100	
Fort Wayne G. L. Co. F. W., Ind		100		105
North. Liberties G. L. Co. Phila.		25	29½	
Washington G. L. Co., Phila....			42	43
Portland G. L. Co. Portland, Me	350,000	50	72	75
Hartford G. L. Co., Hartford, Ct	700,000	25	41	43
Boston G. L. Co., Boston, Mass.	2,500,000	500	770	780
Chelsea G. L. Co. Chelsea, "	300,000		130	
Cambridge G. L. Co., Cam., "	700,000		132¾	
Louisville G. L. Co., Louis., Ky.			127	
Cincinnati G. L. Co, Cincin, O..			208	
S. F. G.L. Co. San Francisco, Cal			95	96
City G. L. Co. Montreal, Canada	1,440,000	40	127	130
Consumers G. L. (old.) Tor., Ont	600,000	50	131	
Halifax G. L. Co., Halifax, N.S..		40	147	149

American Mines in London.

DIVIDEND MINES.

CLOSING PRICES—Sept. 11, 4 P. M.

No. of Shares.	MINES.	Par Value of Shares	Bid.	Total Dividends paid.	Last paid.
		£	£	£ s. d.	
10,000	Battle Mountain, c. (6240 sh.) part paid	5	....	0 10 0	Nov. 1872
15,000	Birdseye Creek. g. Cal.	4	1½	0 14 0	June, 1874
40,000	Cedar Creek. g. Cal.	5	⅝	0 5 0	June, 1873
15,000	Chicago. s. Utah	10	4	1 12 0	May 1875
21,000	Colorado Terrible, s.-l. Col †	5	2¼	0 13 6	Jan. 1875
23,500	Eberhardt & Aur'a, s. Nev.†	02	8¼	1 0 0	July, 1871
60,000	Emma, g. s. Utah (35,000 shares part paid	20	1¼	1 12 0	Dec. 1872
15,000	Ferguson. g. Cal	2	....	0 3 0	Ap'l, 1872
30,000	Flagstaff, s. Utah	10	1⅛	1 2 0	July, 1873
30,000	Gold Run, hydr, Cal.	1	⅛	0 2 4	Oct., 1872
20,000	Last Chance, s. Utah	5	1	0 14 0	July, 1873
65,000	London & California. g.†	2	⅜	0 1 0	July, 1875
15,000	Mammoth Cop.c. s. Utah	10	....	0 5 0	Dec., 1872
5,000	Mountain Chief, s. Utah..	10	....	0 4 0	Jan., 1873
125,000	Sierra Buttes, g. Cal.†	2	1¾	1 14 0	July, 1875
60,000	South Aurora, s. Nev.†	5	⅞	0 14 2	Nov., 1873
15,000	Sweetland Creek, g. Cal. †	4	3	3 0 0	Dec , 1874
20,000	Tolima, g. s. (14,000 sh., £4/10 pd.)	5	3	0 11 6	May, 1874

NON-DIVIDEND MINES.

		Paid.	Last price.	Last Call.
		£ s.	£	
30,000	Blue Tent, hydr. g. Cal.	5 0	5/	Fully paid
12,000	Camp Floyd, s. Utah	10 0	....	" "
6,000	Clifton, s. Col	5 0	....	Feb., 1872
10,000	Crescent, g. Cal.	10 0	....	Fully paid
10,000	Douglas. s. Georgetown, Col..	5 0	....	" "
35 000	Excelsior, Hyd. Gld. Cal.	6 0	..	Dec . 1871
60,000	Exchequer, g. s. Cal	1 0	⅜	Fully paid
10,000	Goetzel Tunnel Co., Col.	7 0	....	" "
40,000	Holcombe Valley, g. Cal.	1 0	1	July, 1873
20,800	Independence, g. Cal.	5 0	2½	Fully paid
20 000	I. X. L., g. s. Cal.	5 0	2½	" "
15,000	New Pacific, g. s. Nev.	0 10	5/	Dec., 1874
32,500	Ruby Consolidated, s Nev...	10 0	....	Fully paid
15,000	Saturn, s. Utah	5 0	...	
10,000	Silver Plume, s. Col	1 0	...	Fully paid
37,500	Snow Drift, s. Col.	2 0	1¼	" "
30,000	Tecoma. s. Utah	10 0	⅛	" "
14,000	Utah, g.. s -l. Utah	5 0	⅛	" "

c. copper; g. gold; s. silver; s.-l. silver-lead; † Quoted on the London Stock Exchange. All of the above are Limited Liability Companies.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. THE ENGINEERING AND MINING JOURNAL, containing the official reports of proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. Blank proposals for membership can be had on application to the Secretary.

IV. The Autumn meeting will commence at Cleveland, Ohio, on Tuesday evening, October 26, 1875.

Local Committee: Prof. J. S. NEWBERRY, CHAS. A. OTIS, FAYETTE BROWN, S. A. FULLER, W. C. ANDREWS.

Arrangements will be made for excursions to the Mahoning Block Coal Fields, to the Tuscarawas Black Band Ore Mines, to Kelly's Island, and to the various local Steel, Wire, and Oil Works.

THOMAS M. DROWN, Secretary, Lafayette College, Easton, Pa.

Office American Gas Light Association,

117 BROADWAY, NEW YORK.

The 3d Annual Meeting of the Association will be held in the City of New York, on the 20th of October, 1875, for Election of Officers, and other business incident to the Annual meeting.

All members of the Association are earnestly requested to be present.

Every Gas Company is invited to become connected with the Association, by having one or more of its Officers, Engineers, or Superintendents become a member.

Individual managers of Gas Works, and all persons practically skilled in the construction and management of Gas Works, are also invited to join the Association.

CHARLES NETTLETON, Secretary.

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THE FIRM OF KUEBLER & SEELHORST, Mathematical and Optical Instrument Manufacturers, No. 925 SANSOM STREET, Philadelphia, is this day dissolved by mutual consent. WILLIAM KUEBLER, by the terms of the dissolution, is authorized to collect the claims due the late firm, and is obligated to pay the debts and liabilities thereof.

WM. KUEBLER,
Sept. 20, 1875. F. SEELHORST.

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Sept. 20, 1875. WM. KUEBLER.

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Office of the CHICAGO SILVER MINING CO.
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A. S. HALLIDIE.—DEAR SIR: I have pleasure in stating that your Ropeway, put up at the Chicago Mine, Ophir District, Utah Territory, one year ago last summer, has been in constant use ever since, and with the most satisfactory results.

The line, as you are aware, is constructed over an extremely rugged country, one and one quarter miles in length.

For the first half mile or so, it is down a very steep mountain side, whence it passes over the brow of another one; thence it continues down Dry Canyon at an angle of fifteen to eighteen degrees.

The structure is an entire success, the cost entire of which has more than been saved already, although it has not been worked up to half its capacity.

In the estimate of earnings no account was taken of supplies sent to the mine, including water, etc., by no means an inconsiderable item. Truly yours, W. S. GODBE,
Manager Chicago S. M. Co. (limited.)

Supt. Office EMMA HILL CONSOLIDATED M. Co.
LITTLE COTTONWOOD, Utah, Dec. 17, 1874.

A. S. HALLIDIE, Esq.: Dear Sir—In answer to your inquiry, I have to report that the Ropeway (built August, 1872), continues to work splendidly, and with but little wear on the rope. It has been everything that was promised, and has proved to be the cheapest way to move ores on steep mountain sides.
Yours very truly, L. U. COLBATH, Sup't.

Send for Circular to

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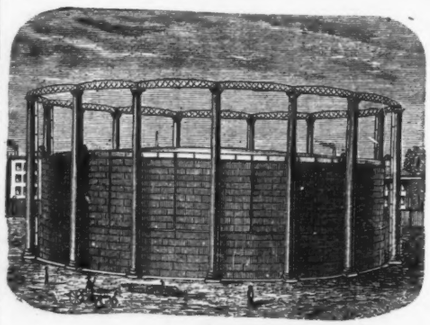

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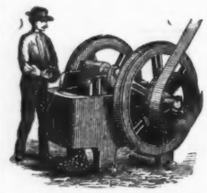

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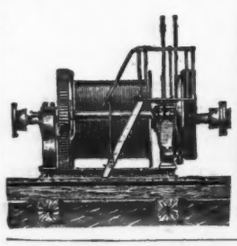

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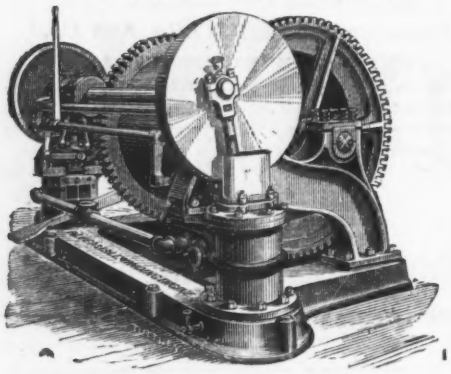

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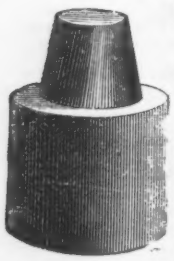

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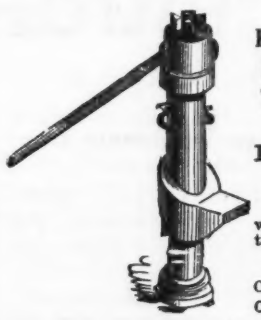

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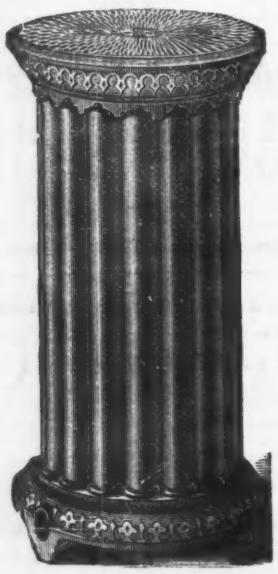

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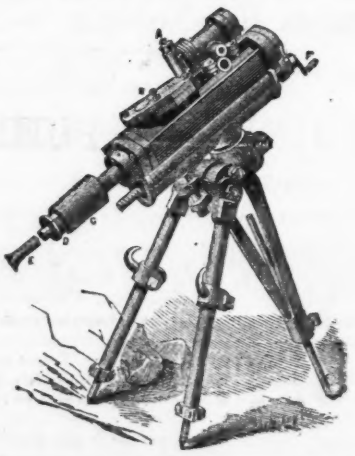

VIRGINIA CITY, NEVADA, June 5, 1875.

PROF. WOOD: Sir—The Drill which you sent to me has been running in the Virginia Consolidated Mine, and they report that it is the best machine that they have ever had in the mine. Send six more immediately. E. H. GATES.

Extract from the Hudson, N. Y., *Weekly Star,* June 10, 1875.

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